

"CINDERS"

THE YOUNG APPRENTICE OF THE
STEEL MILLS



HUGH C. WEIR



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THE YOUNG APPRENTICE OF THE
STEEL MILLS

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GREAT AMERICAN INDUSTRIES SERIES

“CINDERS”

The Young Apprentice of the Steel Mills

By

HUGH C. WEIR

Illustrated by

FRANK T. MERRILL



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THE YOUNG APPRENTICE OF THE STEEL MILLS

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JAN 15 1915

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no,

TO
DR. E. C. HAMILTON
THAT GRAND OLD MAN OF SEVENTY-SIX
WITH GRATEFUL THANKS FOR
THE STIMULUS OF HIS
SPLENDID LIFE

FOREWORD

“CINDERS” is a story of the steel mills, and the third volume in the American Industries Series. In the two preceding volumes, “With the Flag in Panama” and “The Young Shipper of the Great Lakes,” an effort was made to present a picture of two vital phases of modern industrial life — the digging of the great inter-oceanic waterway on the Isthmus, and the wonder stream of shipping of our inland seas. The present book carries forward the general purpose of the series, and presents the adventures of a young apprentice at a great steel plant.

It is the aim of the series not only to tell a story, but to present the salient facts of those phases of our industrial life which have come to be the backbone of the nation. Much of the material for this purpose has been gathered first hand. Many of the characters have their counterparts in real life. In the present book, John Radcliff, the young superintendent of

FOREWORD

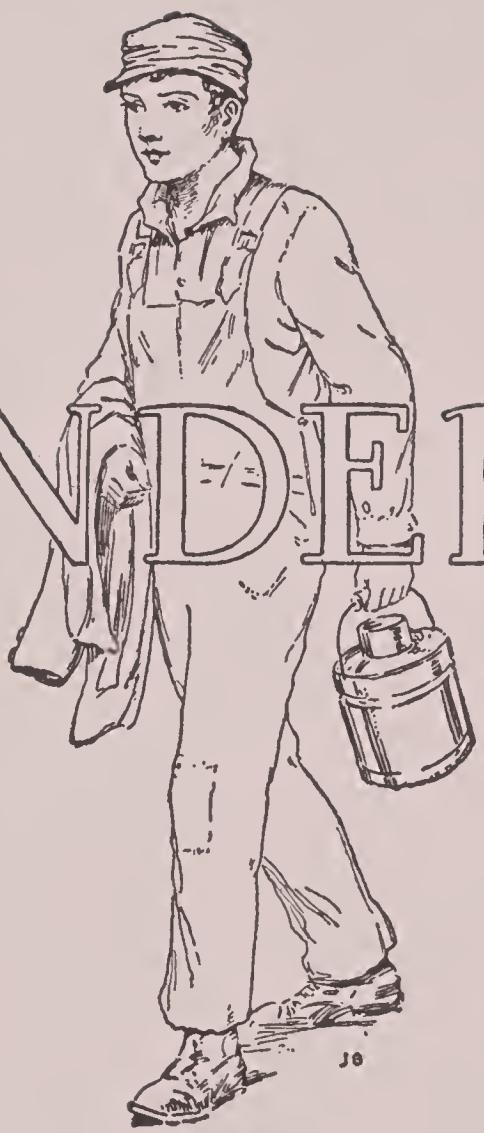
the American Steel Company, is drawn from a similar official of one of our large steel mills, whose climb from the bottom to the top of the ladder was as thrilling as that of his prototype in the story.

If the author has succeeded in awakening the interest of his readers in the romance of Steel, and has left with them any of the stimulus of the great blast furnaces, his purpose will be achieved. Most of us look far afield for our romance and adventure. We do not realize that it is just at our doors, that the man in overalls and jumper is a greater hero than the man in the glittering uniform. Our industries of peace furnish us with more thrills than our battles of war.

Incidentally it may not be amiss to state here that the fourth volume of this series is to deal with the romance of grain, and the story of our monster elevators.

HUGH C. WEIR.

CINDERS



CINDERS

CHAPTER ONE

THE LETTER OF THE AFTERNOON POST

IN after years Eric Raymond often marveled at the change which one hour of a certain October afternoon made in his life. It was as though the hour in question swept him over the border line between a happy-go-lucky boyhood and the responsibilities of a man.

How well he remembered his gleeful shout as he burst into the little white and green cottage that he called home, and tossed his well-thumbed Geometry and Cæsar onto the table in the living room as he caught brown-curled Ruth up from her dolls with a bearlike hug! Mrs. Raymond glanced up from her rocker with a smile as he bent over her with a smacking, boyish kiss.

“You seem excited, Eric. What has happened?”

“You wouldn’t guess in a hundred years, Mumsy!”

Eric threw his feet over a chair and rested his hands on its back, a favorite attitude of his whenever he was swayed by unusual emotion.

To tell the truth, there was too great a supply of animal spirits in his make-up for him to sit quietly at all, unless when absolutely necessary.

Mrs. Raymond surveyed his eager features with that quick understanding of boy nature which endeared her to her impulsive son.

"Have you made the football eleven, or is it the Geometry test?"

Eric laughed.

"Both! How in the world did you know?"

Mrs. Raymond reached over and stroked his hair.

"I'm afraid I wouldn't be much of a mother if I didn't know the hopes of my boy. Tell me about it."

"Well, I am to play left half in next Saturday's game against Merrivale, and, if I don't show that I am good enough to go in for the big Thanksgiving game, well, I'll miss my guess, that's all! And as for the 'Geom' test, what do you think — I actually came through with 98!"

And it is the highest in the class, too, Mumsy. Do you wonder that I am feeling good?"

Mrs. Raymond's eyes lighted.

"No, indeed! And I feel almost as good as you do, Eric."

Ruth sprang up from her semicircle of dolls and came dancing across the floor.

"And will you take me out to the park Saturday afternoon, mamma, to see Eric play?"

"Of course she will, Toots!" returned Eric promptly. "And I'll get you one of the high-school banners, and you'll be my mascot!"

"Really!" cried the little girl, gazing up at her brother with sparkling eyes. "Won't that be *scrumptious!*"

Eric pushed back his chair.

"Oh, by the way, Mumsy, I met the postman outside, and he gave me a letter for you. I declare, I had almost forgotten it. And it came in the queerest kind of an envelope, all marked up with red ink. I guess it has been to the Dead Letter Office."

"You have aroused my curiosity," said Mrs. Raymond as the boy fumbled in his coat pocket and extended the letter he had described.

Eric turned back to the living-room table

as his mother moved her chair nearer to the window and studied the address on the envelope. It was, indeed, a curious superscription. Quite evidently the letter had covered a long, circuitous journey before it reached its final destination, and had been forwarded and re-forwarded until in the handling of the mails its original post-mark was almost undecipherable.

As the journeys of the letter followed closely the history of the Raymond family, perhaps this will be a good opportunity to introduce more in detail the members of the little household.

To begin with, the thriving factory city of Benton, which had sprung up mushroom-like in the heart of the great steel district of northern Illinois, had not always been their home. Their residence in Benton had extended over a period of only nine years, when Mrs. Raymond had obtained her position as teacher in the public schools which she now held — and the slender salary of which formed the principal income of her two children and herself.

For nine years she had been the breadwinner

of the household. Ruth had never known her father. Eric remembered him only as a kind of strange dream.

The youth had been a child of six when Ralph Raymond was selected by a large locomotive works in Schenectady, New York, by which he was employed, to make one of two men to open a branch office for the extension of its market in Lima, Peru. Mr. Raymond had planned to send for his wife and child as soon as he should be settled in his new field — a plan destined never to be carried out.

Six months passed. One day Mrs. Raymond was summoned to the office of the locomotive factory. It was a rosy-faced, smilingly expectant woman who answered. It was a shrinking, haggard woman, who in an hour seemed to have lived years, that returned.

When she caught the chubby Eric to her breast, she stood gazing down at him with an expression of such anguish that it penetrated even his child's brain.

"What is it, Mumsy?" he pleaded; "and where is Papa? Aren't we going to him?"

Mrs. Raymond's lips quivered.

"Oh, boy, boy!" she moaned.

Eric slipped from her arms and pattered to the window, where he pointed out over the gray roofs of the city toward the winter's sun.

"Has Papa gone to Heaven, Mumsy?"

There was no answer; Mrs. Raymond had swooned.

For weeks she lay on the border line between life and death. When finally she struggled back to a shadow of her former self, a baby sister had come to Eric — roguish-eyed little Ruth.

Of what had followed her summons to her husband's factory Mrs. Raymond never spoke. Nor did she refer again to the plan for their long-anticipated journey to South America. The bedtime stories of the Andes and the wonders of Peru, with which she had regaled Eric, were abruptly dropped. In a vague way the boy realized that a great change had come in his mother's life and his own. Dimly he came to know that the bronzed, broad-shouldered man, whose evening home-coming had always found the youngster in eager welcome at the front gate, had gone — and that he would not return.

Had he been older, and more discerning, he would have wondered at the haunting sorrow which persisted in his mother's eyes. It was a sorrow that even the sudden shock of her husband's death could scarcely explain.

If the significance of the fact escaped Eric, however, it did not escape the observation of the family's friends and neighbors.

"Mr. Raymond was killed with three others in a trestle accident in the mountains, where he was testing a new type of locomotive," she had explained.

"And those are all the details you have received?" was asked.

Mrs. Raymond nodded wearily.

"It was of course impossible to bring the body back to the coast."

There the subject had ended. Gradually distorted comments reached Mrs. Raymond's ears, surmises as to the reason for her protracted grief, doubts as to whether the full story of the far-off South American tragedy had been made public. The next week the Raymond family moved suddenly to Benton, Illinois, Mrs. Raymond's girlhood home, where her application for employment as teacher

in the public schools had resulted in the offer of a position.

With a Spartan-like heroism, Mrs. Raymond took up the battle with the world for her two children. To Ruth and Eric their mother seldom referred to the ruddy-faced man, whose picture hung always in the place of honor in their living room. To Ruth the fact, of course, had little significance. As Eric grew older, however, the reticence concerning his father struck him with a deepening force. There was something in their home, something which he could not define, which made it different from the homes of his boy friends.

Instinctively he came to regard it as a shadow, vague, sinister, the shadow of something hidden, and to connect it with his father. Always it seemed to come from the old-fashioned picture in the living room.

And the impression was the more pronounced because, as the years went on, he realized that his mother had never been the same since his father's death. More than once, even in recent years, he had surprised her with her head buried in her arms.

On one such day he had boldly asked the reason for her emotion. Mrs. Raymond had received his question with a silence so prolonged that he was about to repeat it, when she turned with a weary gesture and took his hand.

"Eric, you are rapidly growing to manhood. A few years more and you will indeed be a man. Until then, there are things which it is better that you should not know. It will give me nothing but pain for you to repeat your question until I feel that you are old enough to be given an explanation. If you love me, you will not refer to the subject again."

"Some day, Mumsy, then, I *will* know?"

"Some day," answered Mrs. Raymond gravely.

This conversation had taken place two years before the opening of our story. In the main, they had been two uneventful years, years which had seen Eric's entrance into the Benton High School, and which, with his restless love of outdoor sports, had already given promise of a sturdy physique soon to come. Indeed, at sixteen Eric Raymond was as well developed as most boys of eighteen, impulsive, perhaps to a fault, quick-tempered, but with a rare sym-

pathetic quality which made him popular both among his fellow-students and his teachers.

The advancing years, too, had emphasized a natural mechanical bent in the lad's character, a love of machinery, a fondness for tinkering with all sorts of tools, which gave more than a hint of the course that his life's work might be expected to take. Never was a boy so thoroughly in his element as he had been during his last summer vacation, when, with Mrs. Raymond's reluctant consent, he had obtained employment as a helper in the plant of the Benton Forge Company.

The factory was located just on the edge of the steel-mill district — a district which to Eric held all the lure of a region of enchantment. It was an impression intensified by the great mass of brown smoke, which seemed to hide the wonders beyond like a huge mountain. Eric knew, however, that the mountain was hollow — knew that the slender tongues of flames flashing through the smoke came from the throats of the Bessemer converters, the marvels of modern machinery, and that, somewhere down under the smoke, weird monsters of iron and brick were vomiting boiling metal

in ten-ton streams — that about them six thousand men were at work, swinging, with the touch of a delicate lever, one-hundred-ton electric cranes; feeding one-hundred-and-fifty-foot-high blast furnaces; harnessing torrents of flaming iron; rushing white-hot boulders to the rail mill, the slabbing mill, the billet mill, or the blooming mill; facing death in a hundred forms that the world might have steel.

It was a region, however, to which as yet Eric had never obtained admittance. The details of its wonders had remained a closed book, to be viewed from the outside, for the modern steel plant is one of the most dangerous institutions of American industries, and permits to visitors are not encouraged. Eric was determined that some day the closed gates should open to him, that he would explore their concealed mysteries, and perhaps even bear his part in the drama of the great furnaces.

Perhaps, too —

A gasp from the window, before which his mother was seated in the living room of the Raymond cottage, brought the lad around from the table. Mrs. Raymond had fallen back in her chair, with one hand clutching the letter

of the afternoon post. As Eric sprang forward, she slipped full length onto the floor.

"Mumsy!" he cried, sinking to his knees. Her white face stared up at him without response. Desperately he chafed her wrists as he continued to call her name.

At his shoulders came a cry from Ruth as his sister caught sight of their mother's body.

"Get me some water," the boy commanded, "and then run for a doctor! Quick!"

Two wild questions were racing through his brain. Was his mother, dear, patient Mumsy, dead?

Was it the curious letter which had struck her down? Mechanically he endeavored to slip her fingers from the crumpled paper she still held. But her grasp could not be loosened.

CHAPTER TWO

ERIC FACES HIS FIRST CRISIS

WHEN the physician, summoned by Ruth, arrived at the cottage ten minutes later, Mrs. Raymond was still lying where she had fallen. Eric had placed a pillow under her head and had continued his chafing of her wrists, but there had been no returning consciousness.

Dr. Stebbins kneeled over her body and felt of her heart so long that Eric, unable to restrain himself, caught the physician's shoulder. For the first time the imploring question in his mind voiced itself.

"Is — is she dead, Doctor?"

The physician glanced up impatiently, and then at sight of the boy's pleading features his curtness vanished.

"She is not dead — yet," he answered kindly, "but it would be unwise to disguise from you that she is very, very ill. Are there any relatives or women friends that you can call?"

"Yes, sir!" said the youth eagerly, leaping

at even the faintest suggestion of hope, and finding a vague satisfaction in the prospect of active service. "There is Mrs. Noraker in the next block. I know she will come at once."

The doctor nodded.

"Then get her as soon as possible!" He glanced across at Ruth. "Is there any place you can take your sister for the present?"

Eric jammed his cap over his head.

"She can go with me and stay with Sadie Noraker. Come on, Toots!"

Of the details of the next two hours Eric afterward had only the memory of a nightmare, with his mother lying as motionless as though the hand of death had already reached across the fluttering thread of life. With Mrs. Noraker had come other neighbors, until the cottage contained a group of half a dozen solemnly whispering women.

Mrs. Raymond had been carried to her bedroom and undressed by two of her friends. When Eric tiptoed fearfully to the door, he saw that the letter in his mother's hand had been removed and laid on her dresser.

For a moment the thought came to him to seize the opportunity to read the curious com-

munication. Surely that which concerned his mother's peace of mind so vitally concerned him also. And if there was a secret threatening her happiness, was he not old enough to help her share it?

The remembrance of the nameless shadow in their home came back with vivid force. Was it striking again? He took a step toward the dresser, and then drew back.

In his impulsiveness he had forgotten the other angle of the question. The letter, whatever it contained, belonged not to himself, but to his mother. If she wished to take him into her confidence, she would do so in her own good time. Until then — his eyes filled as he glanced at the bed. It would be almost sacrilege to take advantage of her helplessness, to probe now into that which she had always kept from him. The thought, however, suggested a phase of the subject which he was almost overlooking. If there was that in his mother's life which she had not seen fit to divulge to him, surely she would not wish others to know of it. And at any moment a curious eye might fall on the letter so carelessly displayed. It must be concealed.

Crossing the room, he thrust the folded paper into a drawer of the dresser, locked it, and dropped the key into his pocket.

With a sigh he made his way back to the living room. It was still light. Wonderingly he saw that it was only a little past four. Scarcely an hour had elapsed since he had entered the house on his merry return from school. It seemed to him that an eternity had passed — that he was already viewing the school triumphs, which had meant so much to him earlier in the day, as something far off. It was as though a gulf separated the Eric Raymond of the morning from the youth who was moodily staring out of the cottage window. He turned with a sudden nervousness.

The low-toned conversation of the neighborhood women grated on his ears. There was something grimly solemn in their stiff attitudes and the dissecting glances he felt bent toward him. The pall of death might have already descended over the house. He had the uncomfortable impression that he was on public exhibition — that the group was surveying him with much the same curiosity he had seen directed toward a South Sea Island

native whom a returned missionary had once brought to their church. It was good of the neighbors to come, of course, but — his whole nature was crying out to be alone for a chance to adjust himself to the new problem that had come to him.

Pausing only long enough to catch a somber shake of the head from Dr. Stebbins that his mother's condition was unchanged, he seized his cap and swung out of the house.

The Raymond cottage was located in what was called the east end of Benton, one of the newer residence suburbs, filled mostly with unpretentious homes and populated by the better class of workingmen, who found employment in the local factories. Although the house was situated at a considerable distance from her school, Mrs. Raymond had rented it because of an unusually large yard and the opportunities for outdoor play that it afforded Ruth, and Eric, too, in his younger days.

Only a short distance beyond the city limits ended, and the fields of the country began. Hardly realizing where his steps led him, Eric took no heed of his course until he glanced up

with a start to find himself on a rural road fully a mile from the edge of Benton. His brisk pace and the cool evening breeze had reduced his pulse to normal, and the feverish flush had disappeared from his face.

More slowly he turned and retraced his path. He was conscious that he was facing the first crisis of his life. Granting that Mrs. Raymond recovered, it did not need a physician to know that her health was certain to be more or less seriously affected. There loomed then, with alarming emphasis, the question which confronts every family of similar circumstances in a sudden catastrophe — the question of a bread-winner. And Eric was well enough acquainted with the size of his mother's slender savings to know that the question would have to be answered at once.

At the reflection his shoulders stiffened. The mother who had toiled for her boy so long and so heroically would have to look to *him* now in her emergency. That is, if the stupor in which he had left her did not prove, indeed, the shadow of death!

Eric's steps quickened again as the cottage came into view. At the gate he paused half

fearfully, searching the darkened windows of his mother's room, as though beyond the lowered blinds he might read a hint of the dread tidings awaiting him. It was by an effort that he opened the door and entered.

Dr. Stebbins was packing his medical case, preparatory to leaving. Most of the women from the neighborhood had already gone.

"Your mother has regained consciousness," said the doctor, and then, catching the boy's arm as Eric made an impulsive step toward the bedroom, he lowered his voice: "She is sleeping. Everything will depend now on absolute quiet."

"There is someone with her?" asked Eric.

The doctor nodded.

"I think it best to send up a trained nurse to-night." He gazed at the boy hesitatingly. "Are there no relatives that you can summon?"

Eric shook his head. Of his father's family he had heard little, and except for a married sister in California his mother had no immediate connections.

"I am afraid I will have to get along as best I can by myself," he said slowly. "If you can get a nurse for mother, I think I can manage.

I can leave Ruth at Mrs. Noraker's for the present."

The doctor bent a sudden glance toward the boy's grave features.

"It's a big responsibility, my lad. If there is anything I can do for you —"

Eric flushed.

"No, thank you! Mother has always provided for a rainy day, although I don't know how far her savings will go. But I would be a pretty poor sort of a boy if I couldn't find *something* to do to take care of her."

The physician's glance again swept his face.

"The doctor isn't as hard-crusted as a good many people suppose. If you need any suggestions, or advice, I will be glad to be of service. I'll look in on your mother later."

Eric glanced through the doorway of his mother's darkened room, saw that one of the neighbors was watching at her bedside, and then, thinking of Ruth, took his cap again and departed for the Norakers'.

A warm intimacy had existed for several years between the two families. Indeed, it was through the agency of Mr. Noraker, who was one of the foremen of the forge factory,

that Eric had obtained his previous summer's employment. And the intimacy was strengthened by the fact that among the three Noraker children was one of Eric's classmates, and closest chum, barely two months his senior. Tom Noraker's good-natured face answered his knock. Seizing Eric's hand, the other pulled him into the house.

"You are just in time for supper, Eric. And we've got the biggest, brownest jar of baked beans you ever saw. Sit down while I tell mother to put on an extra plate for you."

Eric shook his head as Ruth came running to his arms. "I can't stop now, Tom; I'm afraid I'll be needed at the house. Mumsy may wake up any minute, you know, and I shouldn't like her to find me gone."

Mrs. Noraker, a sweet-faced woman, from whom it was evident Tom had inherited his infectious smile, bustled into the room in time to hear his reply.

"If you feel that way, Eric, you'll have to let me put up a basket for you. Now don't say a word! A healthy boy has to eat, and I know just how the kitchen at your house would look if you try to get your own supper. I'll

be down before bedtime to see how things are, and you are to come up here for your breakfast in the morning. No, it will not be a bit of trouble. I'd like to know what I'm for if it isn't to lend a helping hand when it is needed!"

Eric's eyes dimmed.

"I wish I knew how I could thank you, Mrs. Noraker!"

"By sitting down in this chair until mother has your basket ready," cried Tom, playfully, forcing him into a rocker. "I say, Eric, Densmore was talking to a lot of us about the team after you left," he continued in an effort to divert the other's thoughts. "And you ought to have heard the compliment he paid you! Why, he thinks that you are the equal of —"

He broke off at a sudden change in Eric's face.

"I am afraid, Tom," said Eric slowly, "that I'll have to leave the team."

"Leave the team! In the name of goodness, why?"

Eric flushed.

"Can't you see what mother's illness means? I'll have to leave school and go to work; take her place in supporting the family — if I can."

Tom stared, and then pushed back his chair.

"I'm sorry, Eric! I am afraid I have made a mess in trying to cheer you up. But that's just like me, always saying the wrong thing —"

"Don't worry about *that*," rejoined Eric, trying to smile at the other's woeful look. "I'm not sure but that I ought to leave school anyway. Somehow it doesn't look just right for a boy of sixteen to let his mother work as hard as mine has worked to support him, even to get an education. I am beginning to feel, Tom, that I have been drifting along without thinking as much as I should have done. When — when I saw dear old Mumsy lying there to-night, so still and white, and — and — thought —"

Eric turned his head away. A curious lump was rising in his throat, which he had to swallow persistently to dislodge.

From the kitchen doorway Mrs. Noraker advanced with a white-covered basket. Placing it on the table, she threw her arm around Eric's shoulders and kissed his astonished lips.

"I couldn't help it!" she cried. "If your mother had heard you, Eric, she would have been proud of you. And now, hurry up,"

she broke off as a suspicious moisture gathered in her own eyes, "or your supper will be so cold you can't eat it. I'll be over as soon as I can."

"And I'll come with her," called Tom, as Eric rather hastily gathered up his load, conscious that his face was flaming.

For a moment after the door had closed the lad stood gazing up at the star-dotted sky, blue and far-away through the autumn haze. What a day it had been! He drew a deep breath. And what would the next day bring in his suddenly altered life?

CHAPTER THREE

A NOTE AND ITS ANSWER

IN periods of great mental stress, the sense of time is often blurred and confused. One loses count of hours, so that the passage of even a single day may stand out as though it had been multiplied indefinitely. It is as if old Father Time had set back his clock, or perhaps tied a double weight to the pendulum.

Afterwards Eric Raymond found it almost impossible to realize that barely three days elapsed between the afternoon of his mother's prostration and the evening when the mingled stupor and fever that had followed abated.

The nurse, whom Dr. Stebbins had sent to the cottage, had left the room to prepare a broth, and Eric had taken her post by his mother's bedside. A slight pressure of Mrs. Raymond's hand drew his glance to her pillow. The gleam of the fever and the stupor, which had broken her periods of delirium, had gone.

With a cry, Eric dropped to his knees and threw his arms around her shoulders.

"Mumsy!"

Mrs. Raymond smiled wanly. "How — how long have I been ill?" she whispered.

"Oh, not long," Eric answered vaguely. "And you're going to be up again now in a jiffy! We can't afford to have as good a mother as you are stay sick, you know."

He pushed back his chair. "I'll call Nurse. We've got a *real* nurse for you, and you ought to see her! She's the best —" He stopped.

His mother's hands were trembling, and she made a movement as though to raise herself. He divined that the remembrance of the fateful letter had flashed to her.

Reaching into his pocket he produced the key with which he had locked the communication in the dresser drawer.

Mrs. Raymond watched him eagerly.

"The letter, Eric, the letter that you gave me — have, have you put it away?"

He nodded. He could feel his mother's eyes searching his face.

Mrs. Raymond's lips moved finally.

"And, and — did you *read* it?"

Eric shook his head, flushing as he recalled the temptation that had come to him.

"No, Mumsy. You will find it in your dresser when you want it."

Mrs. Raymond's eyes closed with a sigh. He hesitated, and then continued suddenly.

"You remember, Mumsy, that some time ago I asked you a question and you told me that some day you would answer it? Wouldn't it help you to take me into your confidence now?"

Mrs. Raymond opened her eyes, and then turned her head and gazed out of the white-curtained window.

"No, Eric," she said at last; "the time has not yet come." She was still staring through the window.

At the sight of her contracted face Eric's hands tightened.

"Did the letter have to do with that which has been worrying you all these years?" he persisted.

He reached over and stroked back his mother's hair. She drew him down until her lips met his.

"Forgive me, Mumsy, but I am so anxious to help you! If there is anything—"

"I know, Eric. Don't you think my mother's heart tells me that? But you must not ask me now! You must not, my boy!"

A step sounded from the doorway, and the nurse bustled into the room. Eric drew back reluctantly. It was as though an unseen hand had come between his mother and himself. Moodily he turned at a sign from the nurse and left her alone with her patient.

What was the shadow that could endure through all these years and strike down his mother so suddenly? What was the burden that she insisted on bearing alone?

There had never been any hidden things between his mother and himself — that is, with the exception of this.

Mrs. Raymond had entered into the hopes and struggles and disappointments of his boyhood with a sympathy and appreciation of his impulsive nature that had made her the first repository of his confidences. The bond between the two had been so deep, so unbroken, that her present attitude came with all the greater emphasis. Would the day ever come when he would know the explanation? Would the shadow in her life, whatever its import,

be raised, and would it be given to him to help remove it?

There was an even more immediate question, however — the increasing question of income for the household.

Even the three days of Mrs. Raymond's illness showed how fast the expenses of the situation, no matter how economically managed, might eat into their modest bank account. With the uncertainty of his mother's condition, Eric had lived the three days in a suspense too poignant to admit of thought of the future. His every faculty had been riveted on the drama in the sick-room. Now, however, a decisive step was imperative. That evening, after a conversation with Dr. Stebbins, he made it.

"Your mother will undoubtedly be confined to her bed for two or three weeks, even granting that she takes no turn for the worse," said the physician as he emerged from her room. "And after that, absolute rest for some months will be necessary for a complete recovery. In fact, in her condition, after such a shock to her nervous system, a long sojourn in a sanitorium would be advisable."

He bent a shrewd glance on the lad.

"I should say that your mother had been working much too hard, and has been confined too closely; but, of course, that is not the primary reason for her illness. Do you know of any sudden mental blow that she has received?"

Eric hesitated, and then realized that he could truthfully answer the question in the negative. He was not familiar with the *nature* of the blow.

"No, sir, I am afraid she hasn't been in the best of health for some time."

Dr. Stebbins looked dubious, but closed his medical case without further comment.

After his departure Eric made his way to the Norakers'.

"Mr. Noraker," he said, coming to his errand at once, "I want to find work. Can you help me?"

Mr. Noraker laid down his evening newspaper and glanced at the boy kindly. Eric had always been a favorite of his.

"Why, I will do anything that I can, of course. I'm afraid, though, that you have struck a bad season at the forge factory. We laid off ten men last month indefinitely."

"I was not thinking of the forge factory exactly," said Eric thoughtfully. "I thought perhaps I might find an opening at the steel mills. You know, it has always been my ambition to enter one of the plants and learn the business from the ground up."

"You have set me a harder problem than I would find at our own place, my boy," replied Mr. Noraker. "I understand that there are always more applicants for apprenticeship at the steel mills than they can possibly use. And, besides, there is a sort of unwritten rule that the families of the present employés shall always have first chance at any vacancies. Once a steel man, they say, always a steel man. There seems to be a fascination about the furnaces —"

"That's just it!" Eric broke in. "It must be one of the greatest things in the world to work in the neighborhood of all that wonderful machinery. Why, if I could get a chance to be a steel man, I—I—why, I would do almost anything!"

Mr. Noraker smiled.

"In your enthusiasm, I fear you are forgetting that there is something besides the inspiration

of marvelous machinery in the making of steel. For instance, it is one of the most dangerous industries in existence.” He fixed his eyes on the youth’s flushed features. “Do you know that there is a man killed or seriously injured in American steel mills every day—not to mention the hundreds of minor accidents?”

“But on the other hand,” protested Eric, “think of the satisfaction of having even a small part in such an industry! Why, steel is the biggest subject in this country. I have often thought that the men who make it must feel a good deal like soldiers on a battle-field. I was reading the other day that the United States produces enough steel in three years to outweigh the whole population of the globe. And in one year this country makes enough steel to form a belt ten feet wide and an inch thick around the world. Just imagine what would happen if the making of steel should stop even for a month!”

“I say, Eric, you *have* been cramming!” cried Tom. “I couldn’t remember those figures five minutes.”

“But then you haven’t the ambition to be

a steel man," said his father dryly. "Eric is right. Steel *is* the biggest industrial subject that we have to-day. He might have added that in a little over a generation it has made a thousand millionaires, and that the pay-roll of the United States Steel Corporation alone runs to a million dollars a week."

"If I thought that there was a chance for me among the next thousand millionaires," interjected Tom, "I believe I would be a steel man, too."

"I fancy you would find it a hard struggle before you reached *that* list," laughed Mr. Noraker. "Money doesn't grow on bushes in the steel industry any more than in any other industry. It is made only by hard work and ability. Practically every big man in steel wore overalls and carried a dinner bucket when he started."

He moved his chair close to the living-room table and drew paper and ink toward him.

"If you really are determined to try your luck at the steel mills, Eric, I will give you a note to a friend of mine, who is one of the assistant foremen of the American Company. If there is a chance for you, I know he will

tell you about it at once. But you had better save your thanks," he added as Eric broke in. "You must remember that even if there is an opening there may be two or three dozen applicants ahead of you."

Mr. Noraker finished his note and addressed it. "I would suggest that you present this at noon. Then Mr. Howard will have time to talk to you. During working hours you would probably find trouble in securing admittance to him." He extended his hand.

"Good luck, my boy! You might drop in to-morrow evening and let me hear how you come out."

"And let us congratulate you if you have taken your first step toward becoming a steel millionaire," added Tom, grinning, as he prepared to accompany his friend home.

"I will!" promised Eric. He little dreamed, however, of the strange situation in which he was destined to find himself the next evening; nor how little opportunity he would have to redeem his promise.

Eric Raymond would not have been human had he left home the following morning with any but the most glowing anticipations as to

the result of his errand. There was a spring in his step, and an assurance in his eyes, that could not have been more in evidence had a position already been offered to him. Youth is the period of optimism.

Mrs. Raymond had passed a hopeful night, and had dropped off again into a light slumber before Eric left the cottage. The lad was rather thankful for the fact. He had planned to say nothing to his mother of his purpose until he had something definite to report. Instinctively he felt that she would at once combat his intention of leaving school, and might even insist that he continue at his studies, and endeavor to devise some sort of sacrifice to enable him to do so. And the time was over for her to make sacrifices! He was determined on that.

A quarter of an hour's brisk walk was quite sufficient to carry him to the boundary of the steel district and the zone of the long smoke-enveloped plants, which his boyish imagination had always viewed as a modern Aladdin's land. In fact, there were two steel districts in Benton, almost overlapping one another.

They could not have been more completely isolated from each other, however, had a wall separated them. One was the property of the American Steel Company, in industrial parlance belonging to the "Independents." The other represented an outpost of the great steel combination, called the "Trust." The battles between the two, fought with dollars and not bullets, were often as stirring as the battles of war times. Eric had devoured the accounts of their clashes in the local newspapers, and it was characteristic of him that from the first he had given completely and voluntarily his allegiance to the cause of the Independents. Never did veteran steel magnate thrill more at a hard-won victory than did Eric Raymond at every gain of the American Steel Plant, gains which were achieved only by the most adroit tactics, for it faced a foe that never slept, and which was constantly on the lookout for the slightest vantage-point of attack.

It was, therefore, with something of a spirit of familiarity, however remote, that Eric extended his letter of introduction to the warden at the central gates of the American Company and asked that it be delivered to Mr. Howard.

The noon whistles had already sounded, and a stream of workmen, residing near enough to eat dinner at home, was pouring out from the long buildings beyond.

Eric watched them eagerly. Why, many of them seemed scarcely older than boys, and he was confident that there were at least two who did not exceed his own age. He had yet to learn that steel is an industry of young men — that it is a taskmaster before whose relentless demands only a vigorous constitution can stand. Old age has no place in the steel mills.

The guardian at the gate, who had taken his letter, called to Eric suddenly. He had been joined by a second man. The lad stepped forward with a quickening of his pulse. At last he was to be admitted to the region where had centered so many of his dreams. Doubtless Mr. Howard had sent word to show him in.

“You are the boy with the note to Mr. John Howard?”

“Yes, sir,” answered Eric eagerly. “Can he see me?”

The man looked at him with a peculiar gravity. “Mr. Howard was killed at ten o’clock this morning,” he said slowly.

CHAPTER FOUR

THE RÔLE OF CHANCE

SO unexpected was the announcement that Eric clung to the gate.

“Killed!” he gasped.

The man, who had received his letter, shrugged.

“Blast furnace explosion,” he said laconically. “Three men were caught in it.” He shrugged again.

Eric stared. The man had spoken in as matter-of-fact a tone as though tragedies claiming three victims were routine incidents. For the first time the lad was beginning to sense something of the toll which the octopus Steel demands of men in return for the power that it gives them.

The man stepped back.

“Mr. Howard’s body was taken to his home. If you want to go over you will find his house at the corner of Green and Locust streets.”

Eric drew a deep breath.

"My business with him was not of a personal nature exactly."

The casual spirit with which the other referred to the accident had intensified rather than lessened its shock. In after-days the lad was to learn that familiarity breeds contempt even toward death — that the men who labor shoulder to shoulder with danger in the day's work become dulled, as it were, to its presence. The same is true of the soldier in the heat of battle. He shrugs at the bullet which would send the man at home to his feet in a panic. And yet transplant the soldier to the metropolitan crossing, whose clangling traffic the peaceful city dweller threads without a thought of peril, and he will tremble with nervousness.

"If you don't mind," cried Eric as the man at the gate moved away, "perhaps you can help me. My letter to Mr. Howard was in regard to securing work. Can you tell me where to apply for employment?"

The other paused.

"I say, youngster, for a tenderfoot I like your grit. So you are not scared off, eh?"

Eric flushed.

"I'm not particularly anxious to be killed, of course, but I *would* like a chance at an apprentice job, if there is anything open."

The man grinned. "If you will wait here I will drop over to the Employment Bureau and see what the boss has to say. Perhaps I had better take your note to John Howard with me."

"Thank you!" said Eric, "I will be glad to wait."

He turned from the gate and stared about him curiously. Bordering the wall was a hard-packed, open tract of ground running down to the private switch-tracks of the company. Across a narrow street, which fronted it, extended a dingy block of restaurants, pool rooms, cheap boarding houses, and gaudily painted saloons, the latter supplying the only points of color in the drab scene.

Even to Eric's inexperienced eyes, however, it was apparent that among the throng of workmen, rapidly filling the street and the open stretch of ground, those congregated in the neighborhood of the saloons were of the more shiftless and slovenly type.

The alert-featured, clean-cut men, whom

he judged to represent the skilled class of labor in the mill, avoided the glaringly painted saloon doors almost without exception.

The scene would have impressed a much less observing youth than Eric Raymond.

In the crowd before him were a dozen different nationalities — oily-featured, gesticulating Italians, shuffling, muddy-faced Greeks, heavy-eyed, squat-shouldered Polocks; bushy-whiskered Russians; stolid Germans, puffing silently on long-stemmed pipes; blue-eyed, fair-complexioned Scandinavians; and, outnumbering them all, brisk-moving, nervous-tempered Americans, who regarded their neighbors from over the seas with a good-natured grin at their national mannerisms.

Apart, too, from the varied nationalities represented in the cosmopolitan throng, there were other points of interest.

The trail of the roaring furnaces stood out prominently. It was as though the hopper of the mills had left its mark on almost every one of the army of workmen whom it drew into its depths — shoulders bent in an unnatural stoop, faces flushed a strange brick-red from the constant heat of the molten metal,

blistered with jagged burns, or criss-crossed with curious scars.

But there was that in the throng, more significant than even the shadow of physical suffering exacted in the reaping of the world's steel harvest.

This was an almost indefinable glow of optimism, of buoyancy reflected in the most stoical face and the most badly maimed figure. For a long time Eric was not able to understand its cause.

Gradually he came to know that it was the spirit of conquest, the thrill of victory over the great driving trip-hammers, the giant cranes, the roaring furnaces. Men had harnessed them, and put them to work, and made them do their bidding. And if, in retaliation, they struck at their master at the slightest opening in his guard, and reaped their vengeance in mangled victims, they were none the less slaves of the human will.

Even the lowest apprentice, although, of course, he could not explain it, seemed to imbibe this idea of man-made power. It was a part of the atmosphere of the plant, the real fascination of the steel-maker.

Eric turned eagerly as the voice of the gate-man sounded again at his shoulders.

"I'm afraid, my boy, there is no chance for you."

"But I am willing to take almost any kind of place to get a start," Eric protested. "And you will find I won't balk at hard work."

"I believe that," said the other kindly. "But the apprentice list is full up, and there are over a dozen applicants waiting for the first opening — most of them sons of mill men, who, of course, would be given a preference. Perhaps later on though —"

"It is a case with me of finding work now," said Eric gloomily. He drew back reluctantly. "I'm much obliged to you though."

"I'm sorry I am not able to do you any good," rejoined the gate-man. "Luck to you, anyway."

Eric smiled faintly. He should have expected to find difficulties in his way — and he was allowing himself to be discouraged at the very first setback! How much of a success could he expect to make if he was that easily dismayed?

He puckered his lips and forced them into a whistle as he moved away, conscious that

there was little music and less optimism in the sound. At the end of a block, however, his notes had grown stronger and steadier, and something like the old sparkle had returned to his eyes. Certainly the big men in the steel industry, who had begun with a workman's dinner bucket, had found a start somewhere. If they had done so, surely he could find a beginning, too!

Perhaps Mr. Noraker could suggest another channel of approach. His steps quickened at the thought. Why not call on him at the factory instead of waiting to see him at home that evening?

The forge plant was located on the other edge of the steel district, and the most direct route to it lay through the business part of town. Eric changed his course, determined to put the suggestion into immediate execution. The whistles closing the factory noon hour had already sounded, but he was confident that Mr. Noraker would give him a welcome at any time.

Turning up Mound Street he branched into Main Street near the Public Square, so occupied with his thoughts that it was with a start

that he found himself in the retail section of the city. The post-office clock clanged out a long solitary stroke. One o'clock! A quarter of an hour would carry him to his destination. He swerved his steps to the edge of the curb at the Metropolitan Hotel, where a crew of workmen engaged in the remodeling of the entrance had temporarily blocked the sidewalk. As he did so his eyes caught the gleam of silver on the pavement. At his feet lay a sterling-mounted pocketbook. He stooped toward it, conscious that it had dropped from the handbag of an elderly, fashionably dressed lady who was just turning into the side entrance of the hotel.

He sprang after her. The liveried attendant at the door had closed it again before he reached it, and as he stepped into the corridor beyond, he saw the object of his quest pausing before the elevator. With a flush he hurried to her side. The lady received the purse with a little cry of surprise.

Eric raised his cap at her smile of thanks and stepped back. He was grateful that she offered no hint of reward. He did not know there was that in his face which lifted him

above the suggestion of payment for the service of courtesy.

It was a trivial incident, but it is on just such trivial incidents that the thread of our lives sometimes hangs. Had not Eric Raymond entered the Metropolitan Hotel at that particular hour, or had he returned at once to the street, the whole course of his career might have been altered.

It was the prompting of a boyish curiosity in the newly decorated lobby that slackened his steps and drew him to one of the circling leather seats surrounding the marble pillars of the rotunda. With a little sigh at the unaccustomed atmosphere of luxury he ventured to lower himself onto its gratefully soft cushions.

For a few moments he gazed about him, drinking in the novel details of the scene. He aroused himself with an effort, conscious that he was lagging in the errand that he had set himself. He yawned deliciously, wondering if the homes of the steel millionaires resembled the lobby of the Metropolitan Hotel.

And then every nerve in his body seemed to leap to a tension. During his survey of

the rotunda he had been vaguely aware of the low hum of voices from the other side of the pillar. Even as he was in the act of rising they crystallized into a sentence that brought him back to his seat gasping.

CHAPTER FIVE

ERIC BEARDS THE LION IN HIS DEN

THE elaborately furnished rotunda of the hotel, and the smoke-grimmed steel plant that Eric had just left, were scenes as far apart in points of common interest, one would think, as the poles. Had the youth been asked five minutes before to find any connecting link between the two he would have considered it impossible. And yet the sentence that met his ears from behind the pillar dove-tailed the luxurious rotunda and the smudgy steel mills abruptly.

The sentence in question was the elated declaration, spoken with an emotion that carried it farther than the speaker evidently realized:

“Then if the gentleman makes good to-night, we will have the American people practically at our mercy!”

A chuckle in a metallic tone followed, and then an impatient caution from the person to whom the sentence had been addressed. Eric

strained his ears, but he could distinguish nothing further. He slipped from his seat and strolled down the rotunda for the purpose of obtaining a view of the speakers. It must be confessed that there was no definite idea in his mind beyond the establishing of the source from which had come the strange fragment of confidential dialogue. The significance of the situation had not yet impressed him.

Turning at a distance of perhaps a dozen steps he faced about, taking care not to exhibit too much eagerness. The opposite side of the pillar was now in plain view. On its cushioned seat were two men. The one nearest to him was a grizzled-haired man, with a short stubby mustache, nervously smoking a long black cigar.

His companion was a more slightly built, younger man, with a clean-shaven face and close-cut black hair. There was a pressure in his thin lips, which even to Eric's scanty knowledge of the world hinted at a peculiar craftiness. He divined that it was from him that the sentence he had overheard had come.

Apparently the couple were unaware of the presence of an unconscious eavesdropper.

Hardly had Eric turned when they rose to their feet and made their way to the clerk's desk at the other end of the lobby. Eric watched them uncertainly. After leaving an apparent direction with the young man at the desk, they reversed their steps and, resuming their low-toned conversation, swung toward the side exit of the building. On a sudden impulse he strolled after them.

When he reached the door the two were approaching a motor car, whose chauffeur drew the machine to the curb at sight of their figures. As Eric stepped onto the walk, the elder of the couple sprang into the car with a surprising agility for his age. The younger man remained on the curb.

Eric continued on across the walk, as though interested in the mechanism of an untenanted automobile adjoining the car he was watching. Apparently neither of the two men thought that he was worthy of attention. As the chauffeur turned his wheel, the man on the walk stepped back with a shrug.

"I will meet you at 'The Oaks' to-night then, at nine!"

Over his shoulder Eric saw the speaker turn

briskly down the street and disappear through the doorway of the Lenox office building. The lad thrust his hands into his pockets with a frown. Gradually the import of the situation was making itself felt. That there was a hidden meaning in the sentences he had overheard there could be no doubt. And it was equally certain that, whatever its nature, it foreboded catastrophe to the company where he had unsuccessfully applied for employment.

He was well enough acquainted with the public details of the steel situation and the struggles of the American Steel Company to know that its competitors were constantly on the lookout for methods to check its progress. Were the two men who had emerged from the hotel connected with the Trust? He gave an involuntary whistle at the suggestion.

If this were the case, he had stumbled on information of value indeed, information which might even be the means of forearming the American Steel Company.

But how should he reach the proper officials with his story? What steps should he take to insure his knowledge gaining the ears of the men who could appreciate its meaning?

He flushed. Would he not have his trouble for his pains? The chances were that a boy seeking to gain admittance to the high officials of the company on the plea of "important information" would be laughed at. And after all, he realized that his story would sound vague and incoherent unless those who heard it had their own reasons for believing its truth. If he knew definitely, for instance, the identity of the men whom he had overheard —

He turned back to the hotel with an inspiration. Why not ask the clerk for the couple's names?

Mustering his most assured smile, he approached the desk and leaned over its edge as he caught the eye of the young man at the register.

"I beg your pardon," he began, "but can you tell me who the two gentlemen are who left the desk here about five minutes ago?"

The clerk frowned.

"One of them," continued Eric, "was an elderly man with a short mustache, who was smoking an unusually long cigar."

"Oh!" said the young man at the register, brightening, "you must mean Samuel Newell,

the steel magnate. I thought everybody knew *him* from his pictures. The newspapers have certainly been cartooning him enough lately," he added with a laugh.

Eric drew a deep breath. Samuel Newell, the head of the Susquehanna Steel plant! And the Susquehanna plant was the local branch of the great Steel Trust! His impulse bounded at the possibilities of the thought. No one could doubt now the significance of his chance information.

"Do you know the name of the gentleman with Mr. Newell?" he asked.

"That was John Baker of Pittsburg, the man they call 'Golden-fingered John' in the steel business. They say he has more inside information about the steel market than any other man in the country, unless it is 'Andy' Carnegie or 'Charley' Schwab," confided the clerk, evidently not adverse to impressing his youthful questioner with the extent of his business knowledge. "Mr. Newell took lunch with him here to-day. Mr. Baker is going back to Pittsburg to-morrow. I wouldn't be surprised," he added sapiently, "if there isn't something in the wind. Men like that don't

get together for nothing. But to see them here in the lobby you'd think that making a million or so was an every-day affair to them. You would never take them to be any different from you or me."

Eric's eyes glistened. It there was really a big business coup about ready for execution, perhaps this was the very impression they had sought to give as a mask for their plans. And this might have been why they had met in the hotel instead of Samuel Newell's office!

"Thank you!" he said with a warmth the significance of which the clerk evidently did not appreciate.

"Oh, you're welcome!" returned the other carelessly, stepping back to his work.

Eric's brain was whirling when he reached the street again. Now that the vital worth of his information was assured, he was dazed. He leaned back against the side of the building, trembling with excitement. Something very like stage-fright was seizing him.

A leather-lunged newsboy brushed past him with the first edition of the evening papers. The lad's staccato refrain penetrated Eric's daze.

"Steel Trust Emissary Reaches Benton. New Blow in Big Industrial War Expected. President Fordham of the American Steel Company Ill at his Home."

Eric fumbled in his pocket for a copper and seized a paper from the boy's bundle.

The article under the screaming headlines was built mostly of speculations and surmises. Obviously the visit of John Baker had been seized upon by an alert reporter familiar enough with the war of the steel mills to weave half a column of sensational deductions from the fact. Eric was about to thrust the paper into his pocket when his glance was arrested by another paragraph:

"Daniel Fordham, head of the American Steel Company, who has been confined to his home at 225 Maple Avenue for several days with an attack of grippe, refused to make any comment on Mr. Baker's visit, but admitted that his company has been at work for some time on a new blast-furnace equipment which might be expected to work something of a revolution in the manufacture of steel."

Eric read the paragraph a second time, more slowly. Was there a connection between the

plans for the furnace improvements and the sentences he had caught from the Trust officials? Had he found the key to the situation? If President Fordham had been quoted correctly—

Eric started forward so abruptly that two or three of the passers-by gazed at him curiously. A suggestion had come to him so daring that for a moment it swept away his breath.

Why not carry his story directly to President Fordham himself?

Could he gain admittance to the presence of the great steel man, who was rated among the industrial leaders of the nation?

He had often passed the palatial Fordham residence, and had been dazzled, as had the other boys of Benton, by the magnificence of its terraced grounds, the frowning wall surrounding them, and the glimpse of the tower and gables of the impressive house beyond, rising through the trees like the outlines of an old English castle.

Eric Raymond, however, was not a youth easily daunted. And there was a stimulus in the very magnitude of the undertaking that thrilled him. He folded his newspaper with

tightening lips. He would attempt the errand anyway.

Ten minutes' walk took him to Maple Avenue, the city's most imposing and aristocratic thoroughfare; and another five minutes brought him to the square whose entire length was embraced by the Fordham estate.

At sight of the iron gates of the entrance his brisk pace slackened perceptibly. He walked slowly past, scanning the stone wall of the grounds dubiously, his courage oozing. Without indorsement he could never gain admittance, let alone an interview with President Fordham.

Midway in the block he turned abruptly. Certainly there was nothing in his errand to cause him to shrink or apologize. On the other hand, he was conferring a favor, not asking one. Drawing his cap a little more firmly he walked through the gate and up the winding stone walk that circled through an avenue of majestically swaying oaks.

On either side stretched an inviting expanse of sloping lawn, dotted with flowerplots faded by the October frosts, but which were evidently a wealth of color during the summer

months. Ahead loomed the great stone pile of the Fordham home, whose rugged lines might have been patterned after the fortified hold of some lord of feudal times.

As Eric paused at the graveled driveway bordering it, a cry of alarm in a boyish voice brought him facing about. From the farther corner of the house a frightened pony was dashing, with a lad of perhaps twelve in the saddle. The youngster's feet were gripped in the stirrups, and he was tugging back on his lines in an ineffectual effort to check his headlong course. It was evident that unless the pony was brought up short a serious accident might result.

Eric stepped out into the driveway, and with a reassuring word to the boy in the saddle braced himself. As the pony reached his side, he leaped forward and caught the reins. For a moment a lively struggle followed. The pony was a wiry, high-strung animal, and showed an instant rebellion at the new hand on its bit. But it was outmastered.

At the end of ten yards it slowed to a sullen halt, and its youthful rider sprang to the ground. Eric noticed with quick approval

that, except for a slight paleness, he showed no signs of agitation.

"I say, that was clever work of yours!" the youngster cried impulsively as he patted the pony's quivering neck. "Dandy doesn't often act this way, and it was only an old newspaper blowing in his face that sent him off this time." He glanced across at Eric curiously as the other stepped back, smoothing his rumpled tie. "I guess, though, if it hadn't been for you I might have been in a bad way. I hope Dad doesn't hear about it. He is suspicious of Dandy anyway."

The pony tossed its head, as though expressing its entire indifference as to *who* heard of the affair, while its young master slipped its lines over his arm and fell into step at Eric's side.

"I am much obliged to you," he continued with a precise formality rather noticeable in a boy of his age. Eric saw also, now that he had opportunity to observe him closely, that there were certain curious details in his dress — a close-fitting jacket with a lay-down collar over it, and long trousers, although he was under the average height for his years. And

then he remembered reading that it was the costume of an English schoolboy.

"My name is Fordham, Homer Fordham," went on the lad. "What is yours?"

Eric stared. Was this quiet, unassuming boy at his side the son of Daniel Fordham — the youngster who, the newspapers had said not long ago, would inherit the largest fortune in the Central West? He recalled that the papers had mentioned that he was being educated at the famous British school at Rugby, at the request of his mother, whom President Fordham had married in England. This would explain his dress.

"My name is Eric Raymond," Eric answered, feeling, in spite of himself, a sudden restraint. It was the first boy-millionaire he had ever seen. And there is a certain glamour about a great fortune, even in the democratic United States.

"I came to see your father," he added a trifle awkwardly. "Is he at home?"

"Oh, yes." And then the other continued rather dubiously. "Is it a business matter?"

"Well, yes," said Eric dryly.

The boy's eyes opened.

"Does father know you, or what it is about?"

"No, that is my difficulty. And I must see him without delay."

Homer Fordham paused, his brow knitting.

"If I turn you over to Perkins, the butler, he will send you to Mr. Jones, the governor's secretary. You say you want to see father himself?"

Eric nodded.

"Then I will tell you what I will do," the boy announced with sudden decision. "I'll risk it, and take you into the library myself. Dad isn't in a very good humor to-day. He never is when he is sick, and he has been working since morning with two stenographers, without even stopping for lunch. But I guess it won't hurt him to give you a minute, and if he does raise a storm I will tell him of the good turn you have done me. Here, Watkins," he called, tossing his pony's bridle to an approaching stable-hand. "And now we will beard the lion in his den."

He led the way up the steps of a side veranda, and through a heavily carved doorway into a long dim hall. Midway down its length he

paused at a closed door, and with a backward smile at Eric threw it open.

For just an instant Eric hesitated, and then followed. A square, high-ceilinged room of dark walnut stretched before him, its walls lined with book-shelves extending clear around it, and in its center a broad, heavy table, filled with stacks of typewritten papers, blue-prints, and file cases.

At the table were two men — one with notebook in hand, apparently a stenographer. The other was a short, thickly built man, with a profusion of rumpled gray hair and the keenest, most disconcerting gray eyes Eric had ever seen. Instinctively he knew that he was in the presence of Daniel Fordham.

CHAPTER SIX

AN INTERVIEW WITH A GREAT MAN

AS Eric Raymond paused doubtfully at the edge of the room, Homer Fordham, true to his promise, took the initiative.

“This is Eric Raymond, father.” There was a quality in the gray eyes suddenly bent toward Eric which made the lad feel that they were reading instantly every emotion of his flushed face. They were as sharp and cold as the steel which had made their owner’s fame and fortune. Even Homer shifted nervously.

“Dandy had a bad scare in the yard,” he continued hurriedly, as though anxious to have his explanation over. “If it hadn’t been for Raymond I might have had an ugly fall. When I found he had come here to see you I thought I would bring him in myself.”

“To see me?” Daniel Fordham’s shaggy gray eyebrows raised inquisitively. “I will

have something to say to you, Homer, on the subject of Dandy later. How often have I told you never to ride alone? If this young man has assisted you, of course I thank him." His eyes narrowed. "You said that he had business with me?"

Eric stepped forward, his shoulders stiffening, much as they would have done for a scrimmage on the football field. He raised his eyes to the frowning man before him, uncomfortably conscious that the other occupants of the room were all staring at him.

"I have information," he began, "which I thought you ought to know. It is about the — Steel Trust."

Mr. Fordham's eyebrows again raised, but he gazed at the youth without speaking. Eric endeavored swiftly to shape his thoughts into a few words.

"President Newell of the Susquehanna Steel Company and John Baker of Pittsburg met at the Metropolitan Hotel this noon," he continued. For the first time he felt that there was a flicker of interest in the steady gray eyes regarding him.

"They had lunch together, and on their way

out took a seat in the lobby. In their conversation, Mr. Baker said —” Eric paused a moment, endeavoring to recall the exact words.

There was no doubt now that he was making a real impression. Mr. Fordham had shifted his chair and his lips had tightened.

“Mr. Baker’s sentence,” said Eric slowly, “was this: ‘Then if the gentleman makes good to-night, we’ll have the American people practically at our mercy!’”

“Will you kindly say that over again,” asked Mr. Fordham slowly.

Eric did so. The younger man at the desk stooped over his notebook. For the first time in his life Eric Raymond knew that his words were being taken down in shorthand.

“Was that all that was said?” asked Mr. Fordham, tapping his desk.

“All at the time, sir. There was something else, however, later. The two walked out to Mr. Newell’s automobile, and as it was driving away, Mr. Baker said: ‘I will meet you at ‘The Oaks’ then to-night at nine!’”

“You seem to have a good memory, young man,” commented Mr. Fordham dryly.

Eric flushed.

"May I ask how you obtained this information? Are you an employé of the hotel?"

"Oh, no, sir! I happened to be in the lobby, and was sitting on the other side of the pillar where the two were talking. I didn't know who they were at the time, but as soon as I heard American Steel —" He stopped and then finished impulsively. "You see, I have always been interested in the American Steel Company. Its fight against the Trust has seemed to me just like real war, a good deal like the battles the American farmers had for independence in the Revolution. It must be a great thing to be in a fight like that! I want to be a steel man myself if I ever get the chance."

Mr. Fordham's eyes actually twinkled. Their coldness might have been a mask that had slipped down. The suggestion was heightened when a moment later they resumed their old expression, as though their owner had suddenly realized his indiscretion and snatched back the mask. Mr. Fordham reached over and pressed a button on his desk.

A moment later the door opened and a dark-featured, quiet-appearing man stepped into the room.

INTERVIEW WITH GREAT MAN 81

"Sit down, Rogers," said Mr. Fordham. He motioned to the stenographer. "Please read us the statements this young man has made us."

The clerk obeyed. The dark-featured man sat staring at the wall. Eric, however, had the conviction that there was no change of expression in his own features which escaped the other's notice.

"Well, Rogers," asked Mr. Fordham when the secretary had finished, "what do you make of it?"

The new arrival turned to Eric before he answered the question. "Are you in a hurry to get away, my boy?"

"My mother is very ill, sir; I shouldn't like to be away from home too long without her knowing where I am."

"I presume a half an hour or so wouldn't make any difference?"

"Of course not."

The dark-featured man glanced at Mr. Fordham.

"Then suppose, Homer, you take our young friend in charge for a few minutes," said the latter. "I will call you when I want him."

It was on the tip of Eric's tongue to ask if his information had been of service, but he checked the impulse. A suggestion of suppressed gravity answered the question for him, hinting, indeed, that the others considered his statements too important to discuss in the presence of a stranger. Silently he followed Homer into the hall. As the door closed he had a brief view of the dark-featured man moving his chair closer to Mr. Fordham.

Eric's youthful conductor turned with glowing eyes.

"I say, Raymond, you surely have made a good impression on the governor!"

"Do you think so?" asked Eric anxiously.

"If you knew him as well as I do you would think so, too. Why, when you said what you did about the American Steel Company bucking the Trust he was actually chuckling. And when the governor chuckles it means something! Why, if I ever get him in a humor like that, there are just about 'a dozen things I would strike him for, and he'd give me every one of them, too."

There was something about the laugh which accompanied the declaration that made Eric

smile also. Homer Fordham was just like other boys after all!

"I don't see how you ever managed it," the other continued as he led the way back to the yard. "I mean getting the information you did at the hotel, and putting it together and all. I guess you are a whole lot brighter than I will ever be."

"To tell the truth," said Eric frankly, "it was altogether luck. Anybody else could have done as well as I did, and your father may decide that there isn't anything serious in my story at all."

Homer grinned.

"Do you know who Rogers is, the man that father called in?"

Eric shook his head.

"He is the manager of what the governor calls his secret-service staff, and is one of the best-known detectives in the country."

Eric whistled.

"But why should a steel company need detectives?" he asked incredulously.

"To handle just such cases as you brought up to-day," said Homer, evidently enjoying the opportunity to impart any information to

his older companion. "I have heard father say that his detective department is one of the most valuable features of the company. Why, only last year some patents worth over a hundred thousand dollars would have been stolen if it hadn't been for Mr. Rogers. If there is really anything serious in your information you can be sure that he is just the man to find it out." He broke off impetuously. "How would you like to see my engine-house?"

"Engine-house?" repeated Eric.

Homer laughed.

"And it is a real one, too. Father gave it to me for a birthday present last year."

He paused before a low cement building, adjoining the imposing stables, which seemed to Eric's wondering eyes large enough and comfortable enough to house half a dozen families. With a certain air of proprietorship, Homer flung open the door of the building. Eric paused in the doorway with a cry of astonishment.

The long room before him could not have been filled with a more complete mechanical equipment had it been a section of a busy factory. Along one side had been erected a

horizontal stationary steam engine, with as thorough an attention to detail, from fly wheels to governors, as though it had been designed to supply the daily power for a substantial industry. And all this had been given to Homer Fordham as a *playhouse*, as a toy train would be given to the average boy. Eric glanced at the youngster with a new interest.

"Every day a man comes up from the mills to give me lessons," explained Homer. "You ought to come over sometime when he is here. I'll never forget the look on his face when father told him what he was expected to do. I guess he thought I was sure to blow myself up, and that he would be held responsible. Father says that next year, if he has a satisfactory report, he will give me a chance to show what I can do with the engine myself. Won't that be great! If the rest of my lessons were like this I'd be the happiest boy in the world. Wouldn't it be sport if you could get up as much interest in Latin or geography? But I guess the man who invented them never thought of *that* part of it."

"Are you going to be a steel man, too?" asked Eric curiously.

"Why, I couldn't be anything else if I wanted to. I don't think father would ever get over it if I didn't follow him at the mills. That is why he didn't want to send me to school in England. But mother wanted it, and — and —" The boy's voice quivered, and he walked over to the window. "She has been dead only a year, and Dad and I thought we ought to carry out her wishes."

Eric felt a lump coming in his throat. He was richer than Homer Fordham after all, for against the other's millions he had a—mother!

Homer stepped back from the window impulsively.

"I say, I wish you would come over to see me often. Do you know, I think I am the loneliest boy in Benton. Everybody around here stares at me as though I am a kind of a curiosity, something to be looked at like a side-show. If I could only make people forget my name, and go out in town as plain Tom Jones or Bill Smith! I tried to make Dad see it that way, but it has been so long since he was a youngster that I guess he doesn't understand.

"The other day I saw a lot of boys making up teams for baseball, and I asked them to let me join the game. It was bully for the first inning, and then someone recognized me, and — and — well, all the snap seemed to go. They made me feel awkward, and I knew I was making them uncomfortable, too, so I came home. But *you* don't seem to care. You don't mind if I am Homer Fordham, do you?"

A knock sounded at the door of the building, and an imposing footman bowed to Homer.

"Mr. Fordham wishes to see young Mr. Raymond in his library, sir."

Homer grinned ruefully.

"I was forgetting all about your business with father, Eric. You don't mind if I call you that, do you? I'll wait here for you. I guess Dad wants to see you alone."

Endeavoring to conceal his uncertainty, Eric followed the servant's ramrod figure back to the house. Had the conference in the library decided that his story was the exaggeration of a boy's imagination, or really serious information?

The three occupants of the library surveyed him for a moment in silence as he was ushered

into the room. President Fordham was the first to speak.

"We are disposed to believe, Raymond, that you have given us valuable service, and that you have acted with unusual discretion and promptness in bringing your information to us. You are quite sure you have told it to no one else?"

"Quite sure, sir."

Mr. Fordham looked relieved.

"I am going to ask you another question. What is your own opinion of the conversation you overheard?"

"I have been reading the newspaper accounts of your blast-furnace improvements, sir, and I thought that it might refer to them."

The dark-featured man smiled.

"If you ask me, I should say that the American Steel Company ought to make room for a boy like that on a steady job."

"We'll see about that later." President Fordham bent his eyes again on Eric. "How would you like to test your theory, young man?"

"Test my theory?" echoed Eric.

"If certain deductions of Mr. Rogers are correct, we may provide our friends, the enemy,

with an unexpected climax at their appointment to-night. We have thought that we might use you in that connection."

Eric's eyes glistened.

"Do you really mean it, sir?"

"I am afraid you are forgetting, young man," interrupted Mr. Rogers, "that you are letting yourself in for what may be dangerous business."

"I am willing to do what I can, sir," returned Eric eagerly.

Mr. Fordham pushed back his chair.

"Then we may consider the matter settled. I think that, on the whole, we would prefer to have you stay here until Mr. Rogers is ready for you this evening. I will arrange to send a note to your mother for you, if you wish," he added as Eric's face fell.

"Thank you, sir."

"And if to-night's events develop as I expect, I shall have something interesting to say to you to-morrow. The American Steel Company is quick to appreciate real service, my boy."

Something of the momentary smile was again flashing in President Fordham's eyes.

Eric reached the door in a daze. "Something

interesting to say to you to-morrow!" Was he actually to find a start in the career of a steel man? He found himself wishing that someone would pinch him — that he might know whether he was awake or dreaming.

CHAPTER SEVEN

WHAT HAPPENED AT "THE OAKS"

SHORTLY before eight o'clock that evening a low knock sounded at the door of the large cozy room given over to Homer Fordham as his own particular sanctum on the second floor of the big imposing house.

The young heir of the Fordham millions glanced up from the bookcases filling one corner of the room, where he had been showing Eric the contents of his library. With a copy of "Treasure Island" in his hands, Homer went to the door. Mr. Rogers stood outside in a linen duster and an automobile cap.

Something like a twinkle came into his eyes as he noticed the occupation of the two lads.

"You seem to be getting on famously," he smiled.

"I have had the bulliest time I have had for weeks," said Homer impulsively. "Eric and I had dinner together up here, and since then

we have been going through my books. Have you come for him?"

"I have, if he is going with me to-night."

Eric jumped to his feet, although not without a reluctant glance at the generously filled shelves at his shoulders. He had never imagined that any single youth was the possessor of such a wealth of boys' books. Why, there were complete series of all his favorite authors, from Jules Verne to Captain Marryat and Mayne Reid! In the contemplation of the treasures before him, the errand that had detained him at the Fordham house had almost completely slipped his mind.

"I am ready, sir," he said to Mr. Rogers.
"Are we going far?"

"Quite a little distance, I should say," answered the detective. "And the less time we lose now the better."

Homer brought Eric's cap with an exclamation of disappointment.

"I wish I could go with you! But when I asked father he looked at me in that way of his which sort of chokes up everything you wanted to say, and I knew there wasn't any use to plead with him."

He turned to Eric. "You won't forget to come back and see me again soon, will you? And say, if there are any of those books you would like to read, I'll be glad to loan them to you."

Eric hesitated, and then shook his head. "I won't take any now, thanks." He fancied that he saw a shadow of approval in Mr. Rogers' eyes. Eric Raymond, seeking employment as apprentice in the steel mills, borrowing books from the son of President Fordham! Perhaps the wide gulf which the thought emphasized between himself and the youngster at his side gave to Eric's parting words more stiffness than would otherwise have been the case.

"You have been very kind to me," he said, stepping after Mr. Rogers, "and I thank you very much."

As he reached the stairs, he glanced back. Homer Fordham was still standing in the doorway of his room, staring after them wistfully.

Drawn up at the side veranda in the yard below was an automobile. Daniel Fordham was pacing up and down before the machine. As he was still dressed in his faded smoking jacket, however, it was apparent that he did not intend to accompany the car.

As he caught sight of Mr. Rogers and Eric he snapped open his watch.

"Oh, I think we'll be in time, sir," said the detective, noting his suggestion of impatience.

"You are quite sure about what you intend to do?"

"Quite sure, sir."

Mr. Rogers motioned Eric to climb into the car. "If all goes well you can expect me back within two hours at the outside."

Mr. Fordham restored his watch to his pocket and stepped closer to the machine. Eric could feel his eyes searching him with the same intentness they had shown during the interview in the library.

"If this night's work results as I expect, young man, you will hear from me to-morrow."

Eric was at a loss whether to say "thank you" or merely "good night." There was something so mysterious, so unreal about the whole affair. Only a few hours before his effort to find employment at the steel mills had met with failure, and now he was being dispatched on an apparently confidential mission by the great Daniel Fordham himself.

Eric moved over to the end of the seat as

Mr. Rogers climbed to his side. The chauffeur bent over his wheel, and the car moved slowly down the driveway. Eric had a last glimpse of the great house looming strangely gaunt and forbidding in the shadows, and then the trees blotted it from view, and the electric lights of the entrance gates twinkled ahead.

The car swerved out onto Maple Avenue in an easterly direction, which, if continued, would soon take it beyond the residential section of the town. Eric peered ahead, realizing suddenly that he had no idea either as to the character of the errand on which they were engaged, or the destination to which they were bound. So far as he was concerned, the situation resembled a good deal a game of Blind-man's Buff. He glanced at Mr. Rogers, and saw that the detective was staring down at the pavement in a preoccupied silence.

A sudden impulse came to the boy to ask an explanation of the affair, and then, with an effort, he checked himself and settled back into his seat. When the time came for his services, if they were to be used, undoubtedly he would be told what was expected of him. Until then the satisfaction of his curiosity

could wait. Although Eric did not realize it, his repression in such a situation was one of the greatest recommendations he could have given to a business man. Mr. Rogers had been mentally speculating as to just how long his young companion would be able to keep his silence.

Gradually Eric awoke to the fact that the automobile was swerving to the south in a circle that would bring it completely outside the city limits. The pavement had given way to dirt roads, and the prosperous-looking residences of Maple Avenue had been replaced by the straggling dwellings dotting the outskirts of the city. And then the last of the municipal electric lights vanished, and except for the acetyline rays of the automobile headlight the path ahead was blanketed in darkness. Eric saw that Mr. Rogers' attitude had changed. His preoccupation had gone, and he was leaning forward alertly in his seat.

For perhaps a quarter of an hour the course of the machine continued. With the town pavements behind, the chauffeur had increased his speed, until the keen night air swept sharply into the faces of his passengers. Two crossroads were

passed, with their signboards creaking dismally in the wind, although with the speed of the car and the darkness it was impossible for Eric to decipher their inscriptions. Shortly after the second guidepost flashed by, Mr. Rogers spoke a low sentence to the chauffeur, and the speed of the machine was reduced. The detective half rose from his seat, with his eyes sweeping the path of the car's headlight and occasionally darting into the shadows at the side of the road. Once he turned and stared for some time behind them.

Eric's bewilderment was momentarily growing. They had progressed a number of miles from Benton, and it was evident that they were following a definite route. Where was it leading? Certainly there was no apparent relation between this lonely country road and the mills of the American Steel Company! Eric had opened his lips again to ask an explanation of the puzzle, when a low stone wall loomed at their right, broken a short distance ahead by an arched gateway. The car swerved close up under the wall and stopped.

Mr. Rogers jumped to the ground and advanced to the gateway. He did not pass

through, however, but stood hugging the wall, apparently reconnoitering. Eric followed him as he saw that the detective gave no indication of returning.

The gate opened into the grounds of an imposing country estate, suggesting the Fordham yard, although much larger and designed on a much more pretentious scale. Just above the gateway an electric light was burning dully, evidently supplied from a private dynamo in the grounds. As Eric's eyes followed the rays of the light, he saw that which explained of a sudden both their destination and the object of their expedition.

In the arch of the gate, illuminated faintly by the light overhead, was the inscription, "The Oaks."

The country home of Samuel Newell, president of the Susquehanna Steel Company! The circumstances under which he had first heard the name, the interview in the hotel lobby of which he had been a chance eavesdropper, flashed back to Eric with a new meaning. It was at "The Oaks" where the officials of the Steel Trust had arranged their appointment with the unknown emissary of the Ameri-

can plant. And it was easy to understand now that Mr. Rogers had planned his trip to discover the identity of that emissary, and perhaps block his purpose. Had Eric been experienced in business reasoning, the object of the detective's mission would probably have been suggested before, and likewise the explanation of his own presence. He would have guessed that he had been brought not so much from any expectation of using him as to prevent his telling his story elsewhere until the company had protected its interests.

Eric felt Mr. Rogers' eyes surveying him with the suspicion of a smile.

"Is the mystery clear to you at last?"

Eric nodded rather ruefully.

"I suppose you think I am unusually dense not to have guessed it before."

"I think you are unusually close-mouthed not to have bombarded me with questions for the last half-hour," said Mr. Rogers dryly.

He snapped open his watch, and stepped to the end of the wall. In the distance Eric could see two or three scattered farmhouses, and perhaps a quarter of a mile down a side road the misty lights of a suburban railway station.

One could guess that it had been erected more for the personal benefit of Samuel Newell than because of any pressing demands of transportation.

“There is a train from Benton due here at nine o’clock,” said Mr. Rogers, drawing the collar of his coat up around his neck as the wind showed signs of quickening. “The person we are expecting may come by rail, or he may follow our example and make the trip by motor. Whichever method he chooses, we have got to intercept him before he reaches his destination — and before he has any suspicion of a trap. Otherwise he would probably be shrewd enough to dispose of any incriminating evidence in his possession before we could reach him.” He moved back into the shadow of the wall as a belated farm wagon clattered by. “If your information is correct, my boy, we should provide him with a disagreeable surprise.”

He drew out a cigar from his pocket, and then restored it reluctantly. “I have known the fumes of tobacco, or the glow of a cigar, to spoil a detective’s vigil of hours,” he said.

Eric felt his pulses tingle as the two walked

back to the automobile. He was actually taking part in a real adventure with a real detective. Wouldn't Tom Noraker's eyes bulge when he heard the story! Involuntarily he found himself glancing over his shoulder toward the wide driveway, winding back toward the Newell house, hidden by the trees and darkness.

And yet there was no hint of excitement in Mr. Rogers' attitude, nothing of the tension Eric had always associated with a detective on a critical case. As a matter of fact, Mr. Rogers spoke and acted exactly like a normal business man about his day's work. Eric would have been still more surprised had he known that the detective's pockets did not contain a weapon of any description.

The chauffeur had extinguished all of the lights of the car so that, except for its vague bulk in the shadows, one might have passed within a dozen feet of it without being aware of its presence.

With a suddenness intensified by the silence of the neighborhood the whistle of a locomotive sounded in the vicinity of the railroad station. Mr. Rogers again glanced at his watch with the aid of a match, and nodding

to Eric hurried back to the end of the wall. Straining their eyes down the crossroad, they could dimly make out a train at the station ahead.

It had hardly paused when, as though impatient at being delayed by such an insignificant station, its whistle shrilled again, and its cars rumbled on into the night. For several minutes the dark stretch of the road showed no signs of an arriving visitor at "The Oaks." Eric was stepping back when a whisper from Mr. Rogers brought him again into attention.

The figure of a tall, well set-up man in a light overcoat was swinging toward them. In one hand was a leather portfolio. Between his lips glowed the red end of a cigar. He was alone and moving at a brisk pace, as though relaxing his muscles after his ride.

Eric caught his breath. Was this the man whose mission at "The Oaks" Mr. Rogers was endeavoring to prevent? And if so how was the detective proposing to act?

The man, advancing toward them, proceeded with an assured, almost a careless bearing. Evidently he counted himself entirely alone, and so thoroughly assured of the fact that

he did not glance either to the right or left. To Eric's overstrained nerves it seemed impossible that he should fail to discover his hidden observers; but when Mr. Rogers, waiting until he was almost abreast of them, stepped out before him the man could not have been taken more by surprise had the detective dropped from the clouds.

For a minute he stood staring in a sort of tongue-tied bewilderment. Eric had vaguely imagined that Mr. Rogers would spring out from his concealment with a drawn revolver, and that a desperate struggle would follow, such as he had once read of in a lurid detective tale which Tom Noraker had smuggled into his father's barn.

But there was nothing to attract the attention of a passer-by unfamiliar with the situation. The man with the leather portfolio seemed too dazed to speak, and it was Mr. Rogers who broke the silence.

"Good evening, Walker," he said dryly.

The other found his voice with an effort.

"What are you doing here?" he stammered.

Mr. Rogers took a step closer to him.

"I fancy that your own errand should explain that." His voice hardened. "You will kindly

give me that portfolio which you are holding so tightly.”

For the first time the man called Walker — and whom Eric now saw was a comparatively young man, not over thirty — glanced wildly around him. The detective’s hand closed over his arm.

“I know what that portfolio contains — and I know that it is stolen property. Are you going to allow me to return it to its rightful owners, or do you want to force me to disagreeable measures to recover it?”

Walker tried to shake off his hand, but Mr. Rogers’ grip was firm.

“You — you have made an absurd mistake. I — I am only carrying some private papers to a friend of mine. You have no right to hold me this way. I shall call for help if you do not release me.”

“Help!” Mr. Rogers’ voice snapped with a sternness which Eric would never have associated with him. “Help from the Newell house, eh? Do you realize, Walker, that you are not only a thief but a traitor? But there is no use of wasting further words. Either you give me that portfolio at once or —”

The detective's hand left his prisoner's arm and closed over the leather bag of papers that the other was carrying. At the same instant the younger man, releasing his hold of the bag, sprang full upon Mr. Rogers' shoulders with the intention of bearing him to the ground.

The detective staggered back under the unexpected weight and tripped on a loose stone in the road. He flung out his arms instinctively to save himself, and Walker seized the opportunity offered to him. Digging his knee into Mr. Rogers' back, he sent the detective sprawling into the road, and snatched the portfolio from his hand.

With a low laugh Walker hugged his recovered trophy to his breast, darting back toward the wall with the evident purpose of springing through the gateway beyond, and then —

In his excitement he did not notice a dark obstruction three or four inches above the road before him. He was glancing forward, not downward. The obstruction in the shape of Eric Raymond's right leg, thrust squarely in his path, did its work well. The fleeing man could not have been tripped more effectually. As he fell ignominiously, his portfolio flew from him.

Drawing back his leg, Eric caught up the bag as Mr. Rogers regained his feet.

Walker, darting a frightened glance over his shoulder, gathered himself up just as the detective sprang toward him. The next instant came the sound of his running steps in wild retreat down the pike.

Mr. Rogers shook his shoulders grimly as Eric extended the captured portfolio.

"Shall we follow him?" asked the boy excitedly.

Mr. Rogers glanced at the contents of the bag with the aid of his match-safe before he replied. A dozen or more folded blueprints and typewritten papers were disclosed. The detective's eyes gleamed as he saw the headings of the first two or three.

"Follow him?" he repeated slowly. "No, my boy, we can afford to let *him* go. Our night's work is over—thanks to your presence of mind."

"Oh, that was easy enough. When I saw him springing toward me I happened to think that if I could trip him I might delay him until you could get back on your feet. If he had seen me first, of course I couldn't have held him. Is the bag what you were hoping to find, sir?"

WHAT HAPPENED AT "THE OAKS" 107

"Even more," said Mr. Rogers closing the portfolio with a deep breath of relief. "Had Walker carried through his purpose, the American Steel Company would have suffered one of the worst business blows of several years. The plans in this receptacle describe one of the biggest improvements ever devised in the making of steel. Some day perhaps you will hear more about it."

With the portfolio clutched tightly, Mr. Rogers led the way back to the automobile. The chauffeur had evidently witnessed the struggle and its culmination, and was already readjusting his lights. As the detective climbed into the car, he paused on the step and glanced over his shoulder toward the frowning trees of "The Oaks."

"I'd like to see the face of Mr. Samuel Newell when his expected visitor doesn't appear;" he chuckled.

But it was not of Mr. Newell that Eric was thinking. He was trying to picture the face of his mother when he should pour into her ears the story of the amazing happenings of the past ten hours.

CHAPTER EIGHT

ERIC MAKES A BUSINESS CALL

IT was not often that the postman found occasion to stop at the Raymond cottage. Had his route been confined to patrons with as little demand on the United States mail service as the Raymond family, his lot would have been an easy one, indeed. On the morning following the surprising series of events we have chronicled, however, the carrier checked his steps at the little white gate and glanced a second time at the topmost letter in his hand.

It must be confessed it *was* a rather remarkable-looking letter for such an unassuming address. The envelope was of a legal size, and in its upper left-hand corner was the heavily embossed inscription, "American Steel Company, Benton, Illinois." Altogether there was a suggestion of official importance about it which would have made it noticeable at once. Balancing it curiously, the postman ascended the Raymond steps and rang the bell.

Eric, fresh from the breakfast table, opened the door.

"Good morning!" he said, smiling. And then he stopped, staring. He had read the inscription on the envelope, and its typewritten address. The important-looking letter from the American Steel Company was directed to himself!

When the postman looked back from the gate the lad was still standing on the veranda, gazing down at the long envelope in a sort of fascinated bewilderment. Surely some mistake had been made!

President Fordham had promised to communicate with him, of course, if the errand of the previous evening developed satisfactorily, but there had been no time or opportunity for him to write and mail a letter for the morning delivery.

Eric did not know that Daniel Fordham did a large part of his work while his neighbors slept.

Eric finally shook himself with a little laugh and tore open the envelope in his hand. Why hadn't he done so at once? Of course he couldn't learn what was in it by staring at the outside.

A square sheet of linen paper, with the same inscription, "American Steel Company," at its head met his wondering eyes, and under it, in smaller type, the line, "Office of the President." And yes — there could be no doubt about it — the signature in a small, cramped writing, "Daniel Fordham."

But it was not these facts in themselves which made Eric gasp of a sudden for breath. Inclosed in the letter was a long, narrow slip of green paper, on which the small, cramped signature appeared again. It was a check, authorizing the First National Bank of Benton to pay to the order of Eric Raymond the sum of one hundred and fifty dollars.

In a daze, Eric read the dozen typewritten lines of the letter — a daze so pronounced that even the fact that it addressed him for the first time in his life as "Mister" passed unnoticed.

"Mr. Eric Raymond,
Benton, Illinois.

"*Dear Sir:* Our Mr. Rogers has reported the result of his expedition of this date, and its satisfactory conclusion, thanks largely to your assistance.

"I am pleased to commend your shrewdness and ability, and in token thereof and in appreciation of

ERIC MAKES A BUSINESS CALL 111

the information which you this day furnished us I enclose our check of one hundred and fifty dollars.

“If you will call at our plant between the morning hours of eleven and twelve o’clock and send your name to our superintendent, Mr. Radcliff, I have no doubt that he will be able to arrange employment for you in pursuance of your ambition to become a steel man.

“Very truly yours,
“DANIEL FORDHAM.”

It was true, then. His eyes were not deceiving him. The letter and the check were actually intended for him. But — one hundred and fifty dollars! Why, why — Eric groped his way in through the doorway of the cottage, across the little living room, and into his mother’s chamber.

At the sight of his white face she rose to her elbow in quick alarm.

He dropped the letter and its inclosure into her hand, and stood staring down at her as she read the typewritten lines. She raised her eyes after a moment, and stretched up her arms.

“Eric, my big, brave boy!” she said. And he found himself on his knees by the bed, with his face on her shoulder. She stroked back his hair.

"Then I am not dreaming after all?" he gasped.

"Of course you are not dreaming, you foolish lad."

"But, Mumsy, think of it! Just think of it! Why, I did nothing — nothing at all to deserve all of this!"

Mrs. Raymond laughed softly.

"Probably not from your standpoint. But I hardly think Daniel Fordham is a man who would sign his name to a business check through sentiment. You can rest assured that in his judgment you are entitled to all that he has sent you. Of course, it was largely luck, Eric. Such a situation might not come to you again in ten years. We must not let our common sense be blinded, you know, even although one hundred and fifty dollars does seem an awfully big amount to us."

Eric rose to his feet, his eyes gleaming.

"That is the best part of it. We can pay your doctor bill now, and you won't have to worry any more, will you? That is enough to give you a good long rest, isn't it?"

"But that money was sent to you, Eric," Mrs. Raymond protested.

"I'd like to know if what is mine isn't yours!" Eric burst out. "What is a boy given a mother for if it isn't to help her? If you are going to talk like that I'll call the nurse." He picked up the letter again. "And I'm going to have a job, too — a real job. Mumsy, I am the happiest boy in Benton!"

Mrs. Raymond's gaze met his rather wistfully.

"Oh, Eric, I — I am afraid!"

"Afraid?" the boy echoed.

"There, now, I shouldn't have said that, I know. But a steel mill seems just like a great cruel battleground — and you are so young, Eric! If you were even two years older —"

"But I'm not, and if I waited until then what would become of you and Ruth?" Eric drew himself up to his most impressive height. "And besides, Carnegie, and Frick, and Schwab, and lots of the other big steel men began before they were as old as I am."

Mrs. Raymond smiled in spite of herself.

"I'll do the best I can then to reconcile myself. But oh, my boy, if —"

Eric kissed her.

"And some day I may be a Carnegie or a

Frick, and we can have a castle ourselves, and give away libraries with our name on."

"We can hope so anyway, can't we, Nurse?" laughed Mrs. Raymond as her white-capped attendant entered the room with her morning broth. Miss Prescott frowned with professional disapproval at the evidences of her excitement.

"Oh, this is the kind of excitement that does me more good than your medicines," said Mrs. Raymond as she noticed the other's glance.

Eric stepped back from the bed.

"I am going over to the mill to see Mr. Noraker, mother, and find what he has to say about it all. Won't he be surprised, though! And I can imagine Tom's face when he hears about it. I think I'll just have about time to see Mr. Noraker and get down to the steel plant by eleven o'clock. I wouldn't be late for anything."

"I don't think there is any danger of your permitting yourself to be tardy," smiled Mrs. Raymond as Eric waved his hand from the doorway.

Quite apart from Eric's boyish eagerness to announce his news, his decision to call on Mr. Noraker was a wise one. There are times in

a lad's life when no one can quite take the place of a father, who can combine a sympathetic understanding of his hopes with the cautioning advice of mature experience. This thought was in Mr. Noraker's mind when he laid down his tools and listened gravely to the boy's excited story.

"You have been lucky, Eric," he said. "I doubt if you appreciate just how lucky, and unless I am very much mistaken you have an unusual chance before you. It depends a great deal with you just how much of a chance it proves to be."

"I am not going to be found wanting," replied Eric confidently; "that is, if hard work counts for anything."

"I wasn't thinking of that exactly," continued Mr. Noraker. "I know you well enough to be sure of your industry. What I meant was that you mustn't let your good fortune run away with you. You will understand as you grow older that the kind of a letter you have received from Daniel Fordham is a real distinction. President Fordham is not a man to give praise without meaning it. There are many men in the business world who would

count themselves ‘made’ with such a letter as you have had. I am telling you this because I don’t want you to let it turn your head. You can be sure that Mr. Fordham will know just how far you presume on his favor, and the spirit in which you receive it. If I were you I would not mention your letter to a person at the mill, not even to Mr. Radcliff, unless he asks you directly about it. If you are given work, as I think you will be, proceed exactly as though the letter had not been written. In other words, make up your mind that you intend to win entirely on your own merits.”

Mr. Noraker picked up a hammer on his bench and balanced it in his hand; but out of the corner of his eye he was regarding the boy closely. He had spoken just as he would have addressed his own son, and because he was keenly alive to the handicap which a fatherless lad, on the threshold of his business life, faces without an older man’s guidance. How would Eric receive his frank words?

The boy held out his hand soberly. “Thank you, Mr. Noraker. I had not thought of it in the way you have explained, and I think I see what you mean. I’ll do my best.”

"I know you will, Eric," said Mr. Noraker, heartily clapping him on the shoulder. "'Gud luck be wi' ye,' as the Scotch say — and let me know what develops."

Mr. Noraker saw the boy to the door and returned to his work. After a moment he stepped back and stared through the grimy window at the side of his bench.

"The youngster has the right stuff in him," he muttered to himself. "What a pity his father isn't here to know it! His father—" Mr. Noraker continued to stare through the window in an abstraction decidedly unusual in the midst of working hours. And then shaking his head slowly he turned again to his task.

It was shortly after eleven o'clock when Eric approached a second time the iron gates of the American Steel plant, where he had proffered his request the previous day and been turned away empty-handed. The long smoke-blanketed buildings, the rows of slender smoke-stacks like sentries on guard, the thin, wavering tongues of flame spurting incessantly up through the blue-gray clouds from the throats of the Bessemer converters — the same familiar details.

Somehow Eric had imagined that they would be changed. But it was only his viewpoint that was changed. He was to make one of the army of industry on this battleground of steel. He was to take part in this war of the blast furnaces. Or at least he hoped he was. Perhaps after all he was to be doomed again to disappointment.

At the belated apprehension, he quickened his steps. The same gateman who had received his message before peered through the bars at him and grinned as he recognized his face.

“Back again, youngster?” he asked cheerfully.

Eric hesitated. Should he ask boldly to see the superintendent? He had been told in Mr. Fordham’s letter, of course, to ask for Mr. Radcliff. Would the manager know what he wanted?

“Will you please tell Mr. Radcliff that Eric Raymond is here?” he asked somewhat uncertainly.

The gateman stared.

“You mean the superintendent?” he said dubiously.

Eric nodded.

"I think he will know who I am. I was told to ask for him when I came to-day." For just a moment he was tempted to give Mr. Fordham's letter to the gateman to deliver to Mr. Radcliff; but repressed the impulse. He could do that later if necessary.

The gateman stepped back.

"I suppose it is all right, young man. If you will wait here, I'll take your message to the superintendent's office. Raymond, you said your name was?"

Eric nodded. "Thank you!" The boy walked back and forth before the gate, trying desperately to look calm and matter-of-fact. The dingy street before the mills was comparatively deserted. In another hour it would be filled with the throng of grimy workmen he had seen the day before, eager to snatch the brief noon-day respite from the roar and clang of the furnaces. From behind the gate came the dull, muffled throb of machinery driven at fever heat, the clatter of switching cars, the rumble of far-off crashing metal. And over it all the smoke clouds billowed and eddied like the waves of an angry sea.

The face of the gateman appeared again

at the bars, and with his first movement the boy started forward. The man was swinging back the gate.

“Mr. Radcliff’s secretary says for you to come right in, youngster.” He glanced at the lad curiously. Eric didn’t realize until long afterward that visitors calling for the personal attention of the superintendent were a decidedly rare occurrence. The gateman had returned from Mr. Radcliff’s office in something of a daze. What possible business could a stripling like this have with the superintendent?

“Maybe you are figuring on buying out the plant?” he said good-humoredly as Eric followed him.

“Hardly,” answered the boy, laughing. His conductor scratched his head, and with another glance at him gave up the problem. Eric’s guide led the way across a wide, cinder-paved yard, past three long brick buildings from which poured gusts of hot, stinging air, and into a much smaller building, where the clatter of typewriters mingled with the throb of the machinery from without.

A young man at a telephone switchboard in a corner of a small reception room nodded

to the gateman and spoke a few words into his transmitter. He looked up and jerked his hand toward Eric.

"You will find Mr. Radcliff's office through the last door at your right at the end of the corridor."

Eric tried to copy the other's businesslike air. "Thank you!" he said, and found himself in a long, narrow hall, evidently extending the length of the building. On one side were a series of private offices, and on the other side a large open room, filled with a score of typewriting machines, all pounding frantically as though each were trying to outdo its neighbor. As an example of frenzied business, the clatter was significant even to Eric.

There was no mistaking the particular door which the young man at the telephone had indicated. A black-lettered sign proclaimed the legend, "Superintendent's Office."

Eric drew a deep breath, and knocked boldly. A crisp voice within called to him to enter. With a suddenly leaping pulse the boy stepped into the room beyond.

It was a square, sparsely furnished office, with a rather worn linoleum on the floor, three or

four straight-back chairs, a long, ink-spattered table in the center, and on the walls a variety of blueprints, some of them rolled up, but most of them hanging loosely. In one corner was a huge roll-top desk, before which sat a young man of perhaps thirty-two years of age, with his coat off and the cuffs of his shirt-sleeves thrust back.

He whirled around in a swivel chair, disclosing a pair of humorous brown eyes. Eric took a step back with a flush of embarrassment. He had evidently made a mistake.

"I beg your pardon," he stammered. "I am looking for Mr. Radcliff, the superintendent of the American Steel Company."

The gray eyes twinkled.

"I am Mr. Radcliff," was the answer.

CHAPTER NINE

THE BATTLEGROUND OF STEEL

THE man at the desk saw the lad's embarrassment, and apparently divined its cause. John Radcliff was an expert in reading human nature. That was one of the secrets of his remarkable success as an executive. The twinkle in his eyes continued. And now Eric saw that their humor had a strangely contagious quality. He found himself smiling back almost before he realized it.

"Sit down," said Mr. Radcliff pleasantly. "I take it that you are Eric Raymond?"

"Yes, sir." Already the boy felt more at his ease. He realized that he was noting the details of the other's appearance as frankly as though Superintendent Radcliff of the American Steel Company was just an ordinary man, like Mr. Noraker, for instance. Why, he didn't look any older than the coach of the Benton High School football team.

"I have had a letter from Mr. Fordham

about you," continued Mr. Radcliff, studying Eric intently in his turn, although the scrutiny was managed so adroitly that the boy was quite unconscious of it. "He says that you want to learn to be a steel man. I am afraid that is somewhat indefinite. Am I to take it that you would like a place in the office?"

"Oh, no, sir," Eric looked dismayed. "I want to be a *real* steel man. I—I thought perhaps you could give me work in the plant. I have loved machinery all my life, and I worked all of last summer over at the tool factory. I know I wouldn't be of much use to you in the office, but if there is an opening as apprentice in the mills I would be very grateful if you could give me a chance."

Mr. Radcliff's eyes twinkled again. "Have you ever seen a steel worker at the end of his day's labor?" he asked suddenly.

"No, sir," answered Eric wonderingly.

"Well, he is about the grimest, sootiest individual imaginable. Sometimes he feels he can't get all of the dirt off, and I guess a good many of them don't try very hard. They count themselves lucky if they are *only* dirty, and haven't half a dozen blisters with the dirt."

There is nothing that burns like hot metal; not even acid.” Mr. Radcliff’s eyes were still twinkling, but he was closely watching the effect of his words.

Eric flushed. “Of course cinders, and grime, and smoke *aren’t* very pleasant, but it would be a funny mill where you could always keep your hands clean. And I guess a little hot water and soap would soon take the *worst* of the dirt off.”

“Good!” said Mr. Radcliff heartily. “So long as dirt and grime are confined to the surface they are unimportant. The greatest steel magnate of the world worked a good many years with dirty hands that most of the young men of to-day would have surveyed with horror.”

“You mean Andrew Carnegie?” asked Eric.
Mr. Radcliff nodded.

“When he was thirteen he went to work as a bobbin boy in an Allegheny cotton mill at \$1.20 a week. His father was employed as a sort of mechanic in the same mill, and his mother took in washing. When he was fourteen young Andy took his first step upward. He was made a furnace stoker at an advance of sixty cents a week in his wages.”

Mr. Radcliff pressed a button in his desk. The door of an inner office opened, and a youth perhaps three or four years older than Eric answered his call.

"Take this young man, Morton, over to Dan Reynolds. He was looking yesterday for a ladle-sculler. Unless he has filled the job, tell him to put Raymond to work in the morning."

"Thank you!" cried Eric impulsively. And then he paused awkwardly as he felt Mr. Radcliff's secretary surveying him with a sort of patronizing astonishment. From the standpoint of that young man, ladle-sculler was one of the most menial labors of the plant, the kind of work to which he took good care to give as wide a berth as the duties of his position permitted. And here was a boy, apparently in his normal senses, giving thanks at the prospect of such a job!

Perhaps Mr. Radcliff also noted the expression of his young secretary. As he turned back to his desk he said casually, "I began as ladle-sculler myself."

"You?" echoed Eric involuntarily.

But Morton was holding open the outer door significantly, and the boy reluctantly followed

him. Back down the long corridor, out of the office building, and across the cinder-paved yard the secretary led the way. Eric glanced at his guide once or twice with a question on his lips, but checked the impulse. Morton didn't look like a young man who would take pleasure in answering the inquiries of a boy whom he was conducting to the employment of ladle-sculler.

A sharp turn brought the two around the corner of a smoky, dingy building ahead, and Eric slackened his steps. The increasing clang and din might have prepared him for the scene before him had he been more familiar with the locality. It was his first close view of the feverish activity of a great steel plant.

For a moment Eric had only a confused impression of a deafening volume of noise. It was not like any sound he had ever heard before. It was the roar of a thousand tons of machinery, pouring from hundreds of hot metal throats. Later Eric grew able to distinguish gradually the various sources of the din, so that he could pick the harsh clatter of the Bessemer converters, the rumble of the blast furnaces, the clang of the great slag pots, and could even tell the musketlike fusillade of

the rail mill from the deeper crash of the rolling mill. But now it was just Bedlam.

And the confusion of it all was increased by the clouds of dirty brown smoke. To Eric it seemed as though he had stepped unexpectedly into a huge cave of smoke. And when the stinging of his eyes passed somewhat, so that he could see more clearly the details of the scene, he had the curious impression that he had shrunken in size. A great steel mill makes a human being feel smaller, punier than almost any other place in the world.

A half-dozen long grimy buildings bulked before him, each thundering out its part in the inferno of noise, and pouring out gusts of hot, dusty air, and occasionally a shower of red, angry sparks, turning to a queer yellow as they were swallowed in the smoke. Miles of railroad track criss-crossed before, and in, and around the buildings; broad gauge track, narrow gauge track, stretching across the open spaces like a great checkerboard, swerving around corners, darting sheer through some of the shadowy doorways, running in couples, running in twenties, and then vanishing in the distance to the level of the lake shore, and

down the yellow Calumet River, and away to Indiana. Later Eric learned that there were over one hundred miles of track in the plant, and that the little snorting locomotives churned with their loads of ore even to the mouths of the Bessemer converters, and up spiderlike inclines clear to the summits of the giant blast furnaces. The steel mill has developed the possibilities of the railroad to the maximum.

And there were cars, hundreds of them, it seemed to Eric — cars carrying coke, cars carrying limestone, cars carrying ladles of liquid iron, cars carrying pots of hot slag, cars carrying ingots of red steel. Behind the cars and the snorting locomotives, behind the shouting men, behind even the dirty smoke was the spirit of something unseen, driving on men and wheels like a taskmaker that is never satisfied. It was the spirit of Steel, lashing, lashing, lashing, never still. The steel plant knows no time, no day or night. The flame of its furnaces glows angrier, more remorseless in the darkness. That is all. Its labor is never finished.

Eric would have lingered in a sort of tongue-

tied fascination had the secretary not taken his arm rather roughly and piloted him across the network of tracks, and around two of the long strings of flat cars. Once or twice an engineer shouted an angry warning as they dodged the more strenuous of the snarling locomotives, but the young secretary continued in a kind of supreme indifference to it all. In fact, judging from the expression he endeavored to cultivate, the whole scene rather bored him.

And then quite suddenly they rounded one of the grimy buildings, and Eric came into full view of his first blast furnace. The previous scenes might have been a prelude leading up to an awesome climax. Eric drew back with a startled gasp. But his emotion was not strange. Many a veteran steel man has never been able to view the blast furnace without a sensation of shrinking awe. It is without doubt the most fearful and the most wonderful creation of human hands.

Imagine a row of eight towers rising sheer into the air one hundred and twenty-five feet. Imagine these towers filled from base to summit with a volcano of fire, shooting into

the sky a billow of black smoke so thick that it might be a geyser of ink. Imagine two streams of snarling, crackling liquid iron pouring from their sides like water gushes from a suddenly opened fire plug. If you can conceive also a rumble like that of distant thunder from the inside of the tower, and yet unlike thunder, because it never stops, you will have a faint idea of a blast furnace. No stretch of the imagination, however, could think of a tower as anything but an inanimate mass of stone or brick. A blast furnace seems endowed with life. That is what rivets the attention of the puny observer at its feet. He finds himself regarding it as something *living*, a great, hostile monster, roaring and breathing fire because it can't tear itself free from the string of little flat cars creeping up a dizzy trestlework to a point just above it, and dumping masses of stinging iron ore into its throat, which it has to swallow, whether or no. Its rumble might be the roar of a beast in agony of indigestion, did we not know that its intestines are a caldron of seething fire, and that it could devour the string of flat cars and the men operating them without so much as a quiver.

It costs one million dollars to build a blast furnace, and without the slightest warning something may go wrong which will cost a small fortune to make right. When you feed it at its top, you can never know just what is going to happen until from the tapping hole at its base you withdraw the pure iron and the refuse that is called slag. And when you consider the fact that there is something like a hundred feet of roaring fire inside, anything like a close investigation of its digestive tract is out of the question. When there is trouble the diagnosis has to be made from the outside.

The main feature of a blast furnace is a huge cast-iron stack, rising up through its brick wall the height of an eight-story building, and capable of holding from six hundred to one thousand tons of molten metal. Each furnace is supplied by what the steel-maker calls two "stoves" — convenient little iron and brick creations from fifty to sixty feet tall. The furnace is heated under an air blast of from eight to twenty pounds per square inch, forcing the heated air upward through the burning mass inside. Otherwise the fire would smother. Of course, the fire alone would not be sufficient

to extract the iron from the ore, nor could the heat be maintained with anything like regularity by fuel supplied only from the bottom. Therefore when a flat car of ore dumps its contents into the flaming jaws, it is followed by a similar car of coke, and one of limestone. The coke helps to feed the fiery tempest, and the limestone supplies the additional agent needed in the melting of the ore because of the following fact.

We know that water has a peculiar affinity for salt. Melted limestone has much the same kind of affinity for iron, so that as the furnace grows hotter and hotter the limestone carries the iron to the bottom, and with it the molten slag, much lighter than the iron, a good deal as milk settles below the cream in a pail. The lime adds to the human likeness of the furnace. One might almost fancy that it is fed to this monster of stone and iron to aid its digestion, just as it is prescribed for a person with a weak stomach after meals.

The operation of the blast furnace, of course, is not so simple in its entirety as we have described. It is complicated by a variety of details in the mastery of which lies the iron-

maker's art. For instance, all iron contains a certain proportion of silicon, of which sand is a compound. If the furnace is kept at a temperature of 800 degrees C., the resulting iron will have a deposit of one per cent of silicon. On the other hand, three hundred degrees more heat, instead of reducing the impurity, will add two per cent to the silicon. And now to understand the operation of the blast¹ furnace we come to the question, what is iron?

As a matter of fact, no one has yet been able to give a satisfactory definition of just what iron really is. It is the most mysterious metal of man's use. It is found more or less in every part of the earth. The spectroscope has discovered it in the stars. The meteors that hurl through space — maybe the cinders of exploded comets — are often huge boulders of iron ore. The forty-ton meteorite which Peary brought from the Arctic to the New York Museum of Natural History is composed almost altogether of iron. One eminent geologist tells us that "the earth itself may be an enormous iron meteor, covered with a thin layer of rock."

Pure iron is as white as silver. Exposed to air or water, it tans with rust. We find iron in

plants, in animals, in human beings. In every hundred persons there is one pound of iron. Without it in our systems, we sicken and die. It is as necessary to our health as to our civilization.

High-grade iron ore contains about sixty per cent of pure iron. There are a variety of other substances—carbon, sulphur, silicon, phosphorus. It is these which the blast furnace, and later the converter, endeavor to eliminate. Wrought iron is iron with almost all of the carbon worked out of it. Cast iron contains from three to ten per cent of carbon. Steel is a mixture of iron with a very small amount of carbon, distributed very evenly and intimately. Curiously enough, the making of steel consists of both a forward and a backward step. It is necessary first to burn the carbon completely from the ore, or as completely as possible, producing wrought iron, and then work the carbon carefully back again under such conditions that its distribution can be controlled. Steel is man's improvement on nature.

For instance, seemingly trivial proportions of sulphur and phosphorus in iron ore will make

it practically worthless for commercial use, because of the brittleness which they impart to it. One pound of phosphorus in a thousand pounds of iron ore is quite enough to ruin it for any mechanical purpose. It was not until we learned how to expel the phosphorus — and with it the sulphur, quite as destructive — that we were able to make steel. Iron is at once the strongest and the most timid of metals. It hates to be alone. Nothing but the fiercest furnace heat will force it to abandon the atoms of sulphur and phosphorus, which are its favorite companions.

As Andrew Carnegie once said: "Sulphur and phosphorus are the little yellow devils of iron, and we have to fight them, as we do other devils, with fire."

It was the learning of this fact which lifted iron above stone, which made from the crude, raw mineral the steel girders of human progress. In the rugged Minnesota hills, iron ore is as cheap as sawdust, an ugly, yellow, lumpy dirt. And yet the product of the Mesaba mine alone is worth eighteen million dollars a year in its raw state. The steel-maker with his blast furnace and Bessemer converter increases

the value of this yellow stream from five to twenty-five times before it finally pours out from his roaring fires into the world.

How long Eric Raymond would have lingered spellbound before the wonders of the blast furnaces it is hard to say. Even the assured young secretary so far forgot his cultivated dignity as to stare with every indication of a lively interest as a momentary tie-up of the flat cars ahead forced the two to a pause.

"I never thought such things were possible!" gasped Eric, forgetting in his excitement the aloofness of his companion. "Why, it — it makes me think that it is all a weird dream, and that I'll wake up in a minute."

"You'll find it a pretty substantial kind of a dream," said Morton patronizingly. "It takes ten tons of ore and coke and limestone every minute to feed those furnaces."

He might have said one hundred tons and Eric would have believed him, as he watched the bright liquid iron spurting from the tapping holes, and flowing in a snarling stream along the sandy bed at the side of the furnaces, where a twenty-ton ladle scooped it into a train of waiting flat cars.

"Is that steel now?" Eric asked.

"I guess this *is* your first visit to a steel plant," rejoined Morton with almost a sneer. "The blast furnaces only make pig iron. It has to go to the mixer, and then to the converter before it is steel. Come on! I think we can get past those cars now. You will see the converters at work as we go along."

Even although Eric was given no time to tarry, let us pause a few moments in the converter department of the American Steel plant and watch the steel-maker at his day's work. Before us stretches a high, seemingly endless room, filled always with a yellow smoke that makes the visitor rub his eyes and cough frantically. The steel-maker, however, is used to it. Like the fireman, he might appropriately be called the "smoke eater." As we grow used to the murk, we see four swaying iron pots, shaped like huge eggs. They are twice as high as a man, and hung on axles so that they can be tilted up and down. These are the Bessemer converters.

Each contains fifteen tons of molten metal. They receive iron. They produce steel. Without them the steel industry of to-day would

be impossible. There is a warning shout to the visitor. Through the two hundred little holes in the bottom of the iron pots, a compressed air current is being turned. Like a tornado it rushes through the metal. The converter roars like a volcano in eruption. A billow of red and yellow sparks — millions of them, it seems — flies a hundred feet into the air. The impurities of the iron — the phosphorus, silicon, sulphur, and carbon — are being hurled out of the metal.

The sparks change from red to yellow. Suddenly they grow white.

"All right!" sings out a grimy workman, watching intently. "Let her go!"

The great pot is tilted sideways, gasping like a monster in pain. A second workman feeds it with several hundred pounds of a carbon mixture to restore the carbon that has been dislodged. The pot is tilted still farther until a lake of white fire gushes from its mouth. Now the whole building is filled with sparks and thick, whirling fumes that vary in color from a light gray to a deep orange. The clothes of the workmen in the path of the sparks are filled with fine holes. Often the holes penetrate to the skin beneath.

Under the mouth of the converter a swinging ladle is pushed to receive the boiling contents. As the ladle is filled, the metal gives out queer little wavering blue flames all over its white surface. They are weirdly, almost hideously beautiful. The steel man calls them the "devil's flower garden."

In its turn the ladle swings out over a train of flat cars, filled with tall clay pots, and drawn by a wheezing little engine. The white-hot steel, with its flowers of flame, vanishes in the clay receptacles, and the converter is drawn back for another fifteen tons of liquid iron.

We appreciate now that steel is not made with hands. Man does little more than touch levers. The compressed air blast and the hydraulic force, which swings the great converter as easily as a schoolboy does his dinner bucket, are controlled by two men sitting on a high platform in a corner of the building. By the movement of an electric lever the mass of iron is operated like clockwork, and with as little effort.

With a snort the little locomotive, attached to the flat cars, creeps down a narrow track, and out through the swinging doors at the other

end of the building. It is bound for the "soaking pit," the next step in the making of steel. Here a long electric arm reaches down over the flat cars, picks up one of the seven-thousand-pound steel ingots from the clay pots, and lowers it into a great tank of gas-fed fire. The steel must be kept at white-heat until it starts on the final section of its journey. This may be to the rail mill, where it is transformed into beams for a bridge in India, or girders for a skyscraper in New York, or the ribs of a ship to be built in Philadelphia, or perhaps into rails for a trunk line up in Canada. Or again, the ingot of rough steel may be bound for the rolling mill, where it will be made into great flat plates for the boiler of a locomotive, or the sides of a battleship. Or it may be made into square rods, chopped into small pieces, and eventually be sent into the world as wire nails, or perhaps as a new wire fence for the farmer's barnyard.

It is in the rail mill, or rolling mill, that we find one of the most amazing scenes of the steel plant. As we pause in the doorway we fancy that the great building is deserted. And then as we seek signs of human occupants,

there is a roaring, hissing noise from somewhere down in the shadows. A long red-hot snake is writhing toward us with incredible speed. In the gloom the effect is ghastly. But it is not a snake. It is an inanimate steel ingot, and its motion is supplied by a series of black rollers beneath it, which at first glance are invisible in the shadows. Suddenly the twisting ingot makes a tremendous dive, for all the world like a snake springing on its prey. It has been caught by another series of rollers. For a moment we lose sight of it, and when we glimpse it again we see that it has been flattened to perhaps half of its first size. And now it is turning over, and back, as though a human intelligence within the molten metal were directing its movement. A second time it dives through the rollers with a strange crackling noise and a cloud of hot, gaseous fumes. Half a dozen times the amazing spectacle is repeated, and then we see, high up on a small platform overhead, two men in their shirt-sleeves. With seemingly careless movements of their hands they are manipulating a series of slender levers. It is these insignificant-looking levers which control the great rollers, the seven-thousand-

horse-power engines behind them, and the fifteen-ton ingot, with which they are playing like two boys would play with a garden hose.

Half an hour later, at the other end of the mill, a fifth of a mile away, the shapeless steel emerges in a series of smoking, glistening rails. Not once from the moment its parent, iron, has been poured into the throat of the Bessemer converter have human hands touched it. Every operation, from refining, "soaking," flattening, and the final shaving into the completed rails, has been performed by machinery. Man has simply acted the part of the task driver.

The experience of the Carnegie Steel Company in the substitution of machinery for human labor has been that the plant can profitably spend one hundred thousand dollars for machinery that will replace the work of one man. A Pittsburg steel plant, with two air-generating engines in its blast-furnace department, has installed a third engine which is always kept idle. And yet it cost fifty thousand dollars. The manager explained that if one of the two engines in operation should break, the capacity of the furnaces would be reduced two hundred and fifty tons a day. The reserve engine in such an

emergency would pay for itself in two weeks' time.

The critical point in the manufacture of steel is that the mill *cannot* be permitted to stop. Its output is not a question of eight hours, but of twenty-four hours. One steel mill recently estimated the loss of a single hour in its running schedule at one thousand dollars. Not long ago a careless workman caused a break in the air-supply engine of a Pittsburg blast furnace, costing eight hundred dollars to repair. But the loss in revenue which the mill suffered because of the break was over four thousand dollars, although the engine was in running order again in less than a week.

This is only one reason why the modern steel plant is a wonderland of machinery — electric trolleys, rollers, shears, machine stamps, chain tables, traveling cranes. Human nerves and muscles could not stand the strain. And even the steel bolts of machinery are exhausted so fast that duplicate apparatus must be kept in reserve. All that many of the workmen need is an ear to hear an order, an eye to see a button, and a finger to press it. Electricity does the rest,

It is not strange that under these conditions Eric discovered that in spite of the awe with which he regarded the wizardry of the giant machinery the men of the mills accepted it as a matter of course. One day he noticed a boy, perhaps a year younger than himself, sweeping the floor of the rolling mills. A new roll had just been delivered, but not yet put into position.

"Here, Jim," sang out the lad to a workman above him. "Just move this roll back ten feet for me, will you? I want to sweep around it."

As Eric gasped, a traveling crane slid gently over the huge mass, and lifted the twenty-thousand-pound obstacle out of the way as easily as though it were a box of paper. But the boy continued his sweeping without even a backward glance. To him there was nothing at all marvelous in the performance. He was used to the wonders of Steel!

CHAPTER TEN

THE HOUSE OF SECRETS

“THIS,” said Morton to Eric, “is the open-hearth mill. We’ll find Dan Reynolds, your prospective new boss, down at furnace No. 11 at the other end.” He spoke with a perceptible accent of relief at the ending of his task of guide. It was plain that he would welcome his escape from the clang of the machinery and the grime of the smoke.

The emotions of his companion, however, passed Eric unheeded. It is doubtful if he noticed them. His attention was much too engrossed in the scene ahead. Before them stretched a building a fifth of a mile long, and seeming much longer because of the dim murkiness of the air. It was edged all along one side by a row of great iron and brick bowls, twelve of them, and in each sixty four tons of white bubbling iron were boiling into steel. These were the open-hearth furnaces.

Occasionally there came a gush of the white-hot metal from one of the furnaces, pouring into ten-ton molds standing in a row on the always busy flat cars. When the molds were lifted the steel stood up by itself in the shape of dull red ingots. As fast as the flat cars were filled, the little snorting locomotive at the end puffed into action, and glided away into the shadows with its precious load, to make room for another string of flat cars, and to carry the great obelisks of steel, solid on the outside but still soft and liquid within, to the soaking pit.

Now and then came a harsh rattling of chains, and an electric crane glided down the building. Perhaps it would pause over a pot of smoking slag, the refuse left over when the pure steel has been run from the furnaces. From the cage of the operator overhead would drop several heavy iron hooks. With a careless twist the ladleman at the side of the slag pot would catch the hooks under the "lugs" of his steaming receptacle. "Lugs" are pieces of metal that project from the rim of the pot, like ears. Bending down, the operator of the one-hundred-ton crane would tighten his chains,

push a lever, and glide serenely away with his twenty thousand pounds of smoking metal. In the operation there was far less noise and confusion than in the moving of a piano.

At one of the last of the furnaces Morton touched the arm of a stocky, grizzled-haired man in a greasy suit of overalls and jumper. As he turned, two details of his appearance struck Eric sharply. The overalls and jumper were covered with tiny singed holes, much as though a hot needle had been through almost every inch. And in the flushed face, bent toward them, was only one eye. Where the left eye should have been was a socket of shriveled flesh. The eye might have been *burned* away. Later Eric found that such was indeed the explanation of its loss. The fact, however, was not so grawsome as might be supposed. Perhaps this was due to the ruddy good humor of the rest of the face. Had its owner been dressed in a white apron and hat, and stationed before a bake-oven instead of a steel furnace, he would have answered excellently the popular conception of a jolly cook.

“Have you found a ladle-sculler yet, Dan?” asked Morton.

The other shook his head, and his sound eye turned questioningly toward Eric.

"In that case," continued the secretary, "Mr. Radcliff says to put this young man to work in the morning." He spoke the words "young man" as though an infinite age separated himself from Eric. Something like a twinkle stole into the foreman's single eye.

"All right, Mr. Morton," he said, with an emphasis on the prefix which to anyone else but the young secretary would have sounded suspicious. "Tell Mr. Radcliff that I'll give him the job."

He turned back to the pit of bubbling iron and stirred the metal for a moment with a long-handled dipper. He withdrew it slowly and stared down at the contents of its bowl intently.

"Here, Jack," he called to a younger man on the opposite side of the furnace, "we are getting a little too much carbon. Throw some of that scrap steel in, will you?"

It was just like a cook tasting a broth, and finding that it needed a pinch more of seasoning. As Eric turned to catch the effect of the words on Morton, he found that the secretary

had already gone. Having discharged his errand, Mr. Morton evidently thought it unnecessary to linger.

As Eric stepped back, uncertain whether or not he was expected to take his own departure also, a whistle rang through the building. Dan Reynolds glanced over his shoulder.

“Do you like apple pie, youngster? If you do, I’ve got the juiciest, plumpest pie in my dinner bucket that you ever smacked your lips over. Wait a few minutes and we’ll go into the yard and sample it.”

The invitation was given with such hearty good humor that Eric flushed.

“Thank you! I’ll be glad to wait, pie or no pie. I would like to ask you a few questions about my work, if you don’t mind.”

Dan Reynolds resumed his study of the furnace, now and then bringing his long dipper into play for a critical inspection of the bubbling liquid. Afterward Eric learned that by this process of “sampling” the quality of the steel can be controlled with wonderful accuracy. If the liquid iron was too acid, limestone was added to the great bowl. If more carbon was required, pig iron was thrown into the

boiling metal. If too alkaline, silica was used to tone it down. If any of the ingredients did not "oxidize" fast enough, more iron ore was called for, increasing the iron supply and enriching the "oxygen content." And so the boiling progressed, for all the world like the making of a witch's broth — except that the most ingenious witch never conceived a broth half so marvelous.

The open-hearth process is the second great method of making steel. The Bessemer converter gave the world the first. There is this difference: the converter boils four tons of steel in one minute, and the open-hearth furnace requires from eight to ten hours. The product of the latter, however, is of a much higher quality. The flaws resulting from the rapid work of the Bessemer converter are eliminated, and consequently it is from open-hearth steel that our boiler plates and great guns are fashioned, where inferior metal might cause fatal consequences.

At the side of furnace No. 11 two of the heavy ladles, used in pouring the liquid iron into the molds, were being scraped by a dark-eyed Hungarian boy, who shot curious, inquir-

ing glances at Eric as he wrestled with the bits of "frozen" steel clinging to the bottom and sides of the awkwardly shaped scoops. Eric divined that this was to be his task also, and he returned the boy's stare with interest at the thought that he was to be his "scullery mate." He wondered if the other could speak English, and was about to put a question to him when Dan Reynolds stepped back with a sigh of relief as much as to say, "Well, I guess that won't boil over or burn until I get back."

With a nod to Eric he led the way into the wash room, and after a vigorous, and, it must be confessed, somewhat ineffectual effort to remove the grime and soot from his face and neck, he conducted the boy out onto a cinder-paved plot of ground at the rear of the building, and, motioning him to a weather-worn bench, opened his battered tin dinner pail.

"Here are bacon sandwiches, youngster, and here is bread and butter with Katie's own grape jelly for good measure. Katie made the apple pie I was telling you about. She is the best cook in Benton. She is my granddaughter," he added with a shade of importance.

Even had Eric not been hungry, and he was suddenly conscious that his morning had made him decidedly so, the first taste of the expert Katie's lunch would have given a zest to his appetite. Dan Reynolds set him the example of silence as the contents of the dinner pail gradually disappeared.

With the last crumb of Katie's apple pie accounted for, Eric pointed toward a small, square brick building at the other end of the yard. Its two visible windows were covered with heavy iron shutters, clamped tight, and its door was reinforced in the same formidable manner. The building looked much like a mausoleum. The only sign of life came from a thin tongue of smoke, eddying up from a chimney in its flat roof.

Dan Reynolds noted the direction of the boy's glance. "That is the company's experiment station," he said. "It is given over to 'Silent' Battles now."

Experiment station! Eric's interest deepened as he recalled the adventures of the previous day. Was it in this little barricaded building where the invention was being perfected, whose plans the Trust had endeavored to steal?

"Who is 'Silent' Battles?" he asked after a pause.

"I reckon a good many persons would like to have an answer to that question," said Dan thoughtfully. "All I know is that he came here about six months ago, and almost at once the company put him to work in the experiment building. Most of the time he hasn't even had a helper. And they say he often keeps himself shut up for twenty-four hours at a stretch. The men call that the 'House of Secrets.' I guess some of those secrets are worth millions."

As Eric turned his head he saw Dan Reynolds regarding him curiously. The foreman flushed, and shifted his gaze awkwardly.

"I was comparing you, youngster, with your predecessor. He was a young Hun, who knew about a dozen words of English."

Eric laughed. "Well, if he could do the work, I should be able to."

"Oh, you won't have any trouble about that when you get the hang — and get used to the smoke. Have you known Mr. Radcliff long?" Dan broke off abruptly.

"To-day is the first time I have met him,"

Eric answered, conscious that his words were adding to Dan's curiosity. Had it not been for Mr. Noraker's friendly warning he would have taken the foreman into his confidence and told him the story. To change the subject he asked, "Is it really true that Mr. Radcliff used to work as a ladle-sculler?"

Dan was frowning at the ground. It was evident that he was trying to explain to himself why the superintendent should take such a personal interest in a boy he had never seen before. He looked up with a start.

"I reckon it is true, youngster; only that was before I came to the mills. John Radcliff was superintendent of the open-hearth department then. You will find, if you are here long enough, that he is one of the coming men in the steel business. But he has earned it all with his own efforts. Why, he went to ladle-sculling the month after he graduated from college."

"College?" echoed Eric in amazement.

Dan nodded. "Mr. Radcliff is a graduate of Stevens Institute. But he had the idea that to learn the steel business something more than school books was necessary. He wanted to secure practical experience along with what he

had gotten at college. Ladle-sculler was the only job open here at the time, so he took it."

Eric was still staring. The picture of a college graduate sculling ladles to supplement his textbooks was startling, to say the least. He would have been still more amazed had he known that on one occasion, after eight hours at the furnaces, John Radcliff presented himself at a class banquet in immaculate evening clothes and made the most applauded speech on the program.

"They had what they called the 'twenty-four hour shift' here at that time," went on Dan Reynolds. "On every alternate Sunday, every man in the open-hearth building worked from seven in the morning until seven o'clock Monday morning. So John Radcliff didn't have what you would call a 'cinch.' But I have known him to work seventy-two hours without a wink of sleep. And he got one of his first big steps up by doing it.

"He was stationed in the rail mill at the time. There had been an explosion in the pump room, blowing out two sheets in a steam pipe and killing three men and a boy. A steel mill

is a good deal like a railroad when it comes to an accident. The damage has got to be repaired at once. There isn't time to study about it. The explosion occurred on Sunday afternoon, just as John Radcliff was getting ready to go home. Instead of going home he took off his coat, put his overalls back on, and stayed on the repair job until Wednesday evening. All his meals were brought in to him in a tin bucket. At seven o'clock Wednesday night the pipe was again in working order. What do you think he did then?"

"Tumbled into bed and slept forty-eight hours," hazarded Eric.

"That is what you or I would have done, but not John Radcliff. He went to the opera. Next to steel, his great hobby is music. Another time, when our rail mill at Joliet was frozen up by a hard winter, Radcliff stayed in the plant a whole week, with only a chair for a bed. He kept the mill from a complete breakdown and saved the company a good many thousand dollars, but he did it at the cost of seven nights' sleep. Oh, you won't wonder, after you know the mills, why he is superintendent. There isn't a man here who puts in the hours that he

does even now. We see him leave his office in the evening, but at midnight the men at the rail mill or rolling mill may see him come in, take off his coat, and work until morning. That is John Radcliff. If he should leave the American plant I believe that five hundred of the men would petition to go with him.

"Once he was knocked twenty feet by a stray crowbar; and on another occasion the top of his hat was shaved off by a hot rail. At first they thought his scalp was seriously injured, too, and every hour they gave out bulletins of his condition to the men. President Fordham took him away for a month's cruise in his yacht after that, but in less than two weeks John Radcliff was back again. He said that resting was only for a sick man, or a woman, and that he wasn't either."

Dan Reynolds ended his story and sprang to his feet so suddenly that he knocked his dinner bucket to the ground with a clatter. A group of the foreign laborers had rounded a corner of the open-hearth building in a chorus of shouts and jeers. Laughing and pushing each other, they gathered about an electric dynamo that had been left in the yard during

the noon hour. Among the number Eric recognized Dan Reynolds' young Hungarian ladle-sculler.

As the crowd parted somewhat, a burly-whiskered Slav bent over the dynamo and fumbled with its mechanism. An angry tongue of blue flame snapped out from its wheels like the tongue of a snake. The Slav straightened and faced toward the young Hungarian with a sneer. Although Eric could not hear his words, nor have understood them if he had heard them, the import of his gesture and attitude made his meaning sufficiently plain. To entertain the crowd, he was daring the Hun boy to take hold of the flaming wire of the dynamo, and the latter, in his ignorance of the danger, was preparing, with flushed face, to accept the challenge.

Dan Reynolds' warning shout fell unheeded. Repeating his cry, the foreman ran forward, but it was evident that he would reach the scene too late. The young Hun was already stooping toward the dynamo, while the crowd fell back, prepared to applaud, or to flee in the event of a catastrophe.

At that moment the iron-shuttered door of the

experiment house was flung open. Into the yard sprang a tall, gray-haired man, with a blue-jeaned apron, such as a machinist wears, hanging down from his shoulders and flapping about his legs. In half a dozen bounds, it seemed to Eric, he was at the dynamo. With his left hand he thrust the Hun boy sprawling backward. Then, whirling, he caught the Slav with his right hand, and in spite of the other's size lifted him clear off the ground and shook him as a terrier shakes a rat.

Back and forth he flung the man, until his teeth chattered, and he gasped for mercy. Not until then did he drop him. Stooping, the newcomer shut off the dynamo, and with a glance of contempt at the cowering crowd turned and strode back to the experiment house. A moment later the heavy door clanged behind him. Not once during the whole incident had he spoken a word.

“‘Silent’ Battles!” said Dan Reynolds, walking back to Eric. “He is a whirlwind, isn’t he?”

But Eric was staring toward the iron door of the experiment house, and did not answer. The foreman turned toward the boy curiously.

“What is the matter?”

Eric aroused himself with a deep breath.

“That man might be Oliver Cromwell of the old Ironsides!”

“I don’t rightly remember Oliver Cromwell,” said Dan, “but I guess ‘Ironsides’ hits ‘Silent’ Battles just about right.”

Eric mechanically reached down and picked up Dan’s dinner pail. He was conscious of a wild wish to know more of the House of Secrets, and of the strange, silent man who toiled in secret behind its barred doors.

CHAPTER ELEVEN

KELLY AND HIS CONVERTER

IF Mrs. Raymond did not appreciate the wonders of the steel industry during the two hours following Eric's return home, it was certainly through no fault either in the eloquence or the enthusiasm of her son. When Eric finally sat down to supper, a search of all Benton would not have found a more excited youth.

His mother had fallen asleep when Eric arose from the table, and the boy softly took his cap from the hook with the purpose of calling on the Norakers.

He had reached the front gate when he caught the vaguely familiar outlines of a figure approaching on the walk.

"Hello, Mr. Reynolds!" he called.

The foreman stopped. "Why, it is the youngster! Is this where you live?"

"This is the place. Won't you come in?"

And then, as the other hesitated, he added, "mother is asleep, and we can have the sitting room to ourselves."

"Well, I don't care if I do drop in for a spell." Dan opened the gate and took his pipe from his mouth.

"Oh, go on with your smoking," laughed Eric. "I am sure mother won't mind." He led his visitor into the cottage and pushed a rocking chair hospitably toward him. Dan accepted the chair with a sigh of contentment. Eric saw that his mother was still sleeping, and gently closed her door.

"There must be a wonderful history connected with the making of steel," he said, drawing a chair up opposite Dan.

Dan's single eye gazed at the boy reflectively.

"Wonderful?" he grunted. "The story of steel makes that book called the 'Arabian Nights' seem as dry as — as an epitaph on a tomb-stone."

Eric smiled. He was already beginning to appreciate Dan Reynolds' amazing figures of speech.

"One Sunday afternoon last fall," went on Dan, "I was up at the public library. The

young man who runs things — I reckon you'd call him a foreman down here at the mill — brought out two or three books from the stock room. ‘I think there is something you would like,’ he said, — something that will take you away from the grind of machinery. These are among the greatest romances in the English language.’

“‘Young man,’ I said, ‘there is more romance in the grind of machinery than in all the story-books ever written. Did you ever hear of Bill Jones, or Bill Kelly?’

“The young man rubbed his glasses, thoughtful like. ‘Can you tell me any of the books they have written?’ And he was serious about it, too.” Dan knocked out his pipe against the palm of his hand with an expression of profound disgust. “The ignorance of some people is astonishing. And that young man was supposed to have a little extra amount of schooling.”

Eric turned away. He didn’t want Dan to see the laugh he was trying to smother, and he didn’t want him to see the question in his eyes either. To tell the truth, he had never heard of the celebrities, Bill Jones or Bill Kelly, himself.

Perhaps, however, the very fact of his silence would induce Dan to explain.

"You probably think I am an old man, youngster. Maybe I am, from your way of looking at it, and yet when I was born steel was almost unheard of in this country. The history of the steel industry really goes back only about fifty years. I thought that would surprise you," he chuckled at Eric's stare.

"When Andrew Carnegie's parents emigrated with him from Scotland, steel was selling for twenty-five cents a pound. A ton of steel costing four or five dollars to-day would have been worth five hundred dollars then. I wonder how much it would cost to ride on a railroad if the rails had been made of steel at that price! The Civil War gave the steel and iron business its first big boom. I guess the big share of the three billion dollars that the war cost Uncle Sam went to the iron men. After the war, the country began to realize that it had to have a new kind of metal. Iron even in guns wore out too fast. The iron ties of the railroads lasted only two years. We had to have something stronger than iron, and as cheap as iron.

"It was about this time that Bill Kelly came into the history of steel. Kelly had a small iron works in Kentucky, making his iron in what was called a 'finery fire'—a small furnace in which about fifteen hundred pounds of pig iron could be heated between two layers of charcoal. The blast of the charcoal was turned on, and more charcoal was added until the iron was refined to the proper degree for factory use. Kelly used most of his iron in the manufacture of kettles, which he sold to the Kentucky farmers, and to a jobbing house in Cincinnati. He was doing a fairly good business, when he found that the wood near his furnace was being exhausted, and the nearest place where he could secure another supply was seven miles away. If he had to haul his charcoal this distance, it meant bankruptcy.

"Maybe it was this fact that quickened his brain. One day he was watching his 'finery fire' when he jumped to his feet with a shout and rushed over to the furnace like a man who has suddenly lost his senses. At one edge of the furnace he saw a small white-hot spot in the yellow mass of sputtering metal. The iron was heated to the point of incandescence —

and yet there was no charcoal near it, nothing but a steady blast of cold air. Why didn't the air cool the metal? In the answer to the question Kelly found the secret of making steel.

"I have never studied chemistry, youngster, but I know enough to understand how Kelly figured it out. You see, carbon and oxygen have what they call in chemistry an 'affinity' for each other. And carbon comes from iron, and oxygen from the air. When the cold air is blown into hot metal, the oxygen unites with the impurities of the iron, carries them off, and leaves the pure iron behind. Kelly had seen that air alone was fuel."

"Of course, the whole town thought he had gone crazy when he explained his discovery. The idea of cold air heating iron, heating it to a more intense degree than the hottest charcoal fire! It was ridiculous. Kelly met the jeers by inviting a number of iron workers to his mill. He wasn't a business man, or he would never have done it until he had taken out patents. While his visitors gathered about his furnace, Kelly sent a current of cold air into the midst of the hot pig iron. At once it changed

from yellow to a pure white. A blacksmith seized a piece of the mysterious substance with a pair of tongs, cooled it in water, and in twenty minutes had pounded out a perfect pair of horse-shoes. Then, with a second piece, he fashioned half a dozen nails and drove the shoe to the hoof of a horse. Pig iron, of course, cannot be hammered into anything. With an ounce of charcoal Kelly transformed comparatively worthless pig iron into valuable malleable iron.

“‘Some crank will be burning ice in a furnace next,’ sneered one of the spectators. But Kelly had proven his point. Later he called his invention the ‘pneumatic process,’ but in Kentucky it was always known as ‘Kelly’s air boiler.’”

“And what became of Kelly and what did he do with his invention?” asked Eric, absorbed in the story.

“His father-in-law was advancing the capital for his furnace. When he heard what Kelly was doing he thought that his son-in-law had gone insane, and wrote him, ‘If you don’t quit this foolishness, I will quit you.’ His customers in Cincinnati who had been buying

his kettles heard of his experiments, and said, ‘We understand you have taken up a new-fangled way of refining your iron. We want our kettles made in the regular way, or not at all.’ And to add to Kelly’s troubles, his ore supply gave out.

“He was forced to move his furnace to another section, and in order to keep his father-in-law’s backing and hold his customers was obliged to return to the old charcoal methods of operation. But he couldn’t dismiss his new idea. It had taken possession of him so completely that one night, with the help of two of his workmen, he moved a rough converter he had built into a secluded section of the woods near his plant. He was determined to continue his experiments until he compelled the world to believe in him.

“In all, he built seven different types of converters in his backwoods hiding place, the fact of his labors unknown to anyone except the two men whom he had employed to assist him. His first apparatus was a square brick structure, four feet high, with a cylindrical chamber. The bottom was perforated for the blast, and as the operator released the air cur-

rent he poured the melted pig iron into the chamber with a ladle. The operation was a success about three times out of five. The greatest difficulty was to make an air current strong enough for the purpose.

"Kelly went to work from another angle, and made a second converter with holes in the sides instead of in the bottom. This worked better. Gradually he brought his apparatus to a point where it could do ninety minutes' work of the old methods in ten minutes. Also he had cut the cost of his fuel by half. In 1856 the country was startled by the news that Henry Bessemer, an Englishman of French descent, had taken out United States patents for a converter depending on air as its refining agent. Kelly at his secret labors in the woods was shocked to learn that the Bessemer idea was practically the same as his own. The time had come for him to declare himself, to come out from his concealment. He filed a claim of priority invention at Washington, and finally the American patent office recognized his claim over that of Bessemer. But even now Kelly was not to come into his own. I am not much of a reader, youngster, but it seems to me that

nearly every big inventor of history, who has thought of something that really was going to help the world, has had to fight against every kind of obstacle before he could make himself appreciated. And the bigger the invention the harder the fight to make the world see it.

"Kelly had hardly won his patent fight at Washington when the famous panic of 1857 swept the country, and he found himself in bankruptcy. Almost without a dollar, he went to the Cambria Iron Works at Johnstown, Pennsylvania, and induced the general superintendent to give him a corner of the yard in which to continue his experiments. In a short time he finished his eighth converter, and announced that he was ready for a public exhibition. Nearly two hundred workmen gathered around the queer-looking apparatus, many of whom were 'puddlers,' whose occupation would be lost if he succeeded.

"'Give me the strongest blast you can blow,' said Kelly to the engineer in charge of the air-generating machine that supplied his converter. The engineer turned on the air with such good will that the whole contents of the converter went flying into the yard in a tornado

of sparks, amid the jeers of the crowd. While air will remove first the impurities of the iron, it will carry away the metal itself if the blast is too strong.

"The next week Kelly said he was ready for another trial. This time he made sure that the air was supplied with proper strength and regularity. When the sparks began to fly from the converter, he ran to and fro, picking them up and hammering them on an anvil. For nearly half an hour every spark crumbled under his blows, showing that the metal was still in the pig-iron state. And then suddenly a spark, instead of crumpling to pieces, flattened out like dough into a solid surface under his hammer. Immediately Kelly tilted his converter and poured out its contents. Seizing a segment of the white-hot metal, he dipped it into water and hammered it into a thin plate. He had won at last. He had built a converter that was a practical success. Kelly remained at Johnstown for five years, selling a controlling interest in his converter to the Cambria Iron Company, that had made it possible for him to complete his experiments. In twenty years he received over half a million dollars in royalties."

"Then he was well paid for all his struggles after all," said Eric.

"Not nearly so well as Bessemer in England," replied Dan Reynolds. "He was paid ten million dollars, given the title of knight, and had the new process named after him. This was due largely to the fact that when the time came to renew Kelly's patent the American iron makers supported Bessemer's claim. Had the latter won instead of Kelly they would have been able to use the new converters without the necessity of paying royalties. To-day we can understand how unjust was their fight."

"It was Kelly who introduced Europe to American factories — or American factories to Europe — whichever way you want to have it. Before his time our industries had been regarded abroad a good deal as a college senior looks on a high-school freshman. Shortly after Kelly won his patent, Disston, the Philadelphia manufacturer, sold a hundred thousand dollars' worth of saws in Europe in one year. And then the North British Railroad Company bought an American steam shovel for fifteen thousand dollars — the first ever seen in England. Not long afterward an American travel-

ing man actually went to Sheffield — Sheffield! — the very heart of the English steel and iron industry — and had the effrontery to offer a consignment of hoes, hay forks, and spades for sale. And what was more, he convinced the British dealers that they were neater, handier, and cheaper than those they could buy at home. But the climax was reached when Englishmen found themselves riding behind an American locomotive on a British railroad. Their outburst of outraged patriotism, however, was not able to meet the fact that even adding the cost of shipment the locomotive cost one thousand dollars less than the lowest estimate at which it could be made in an English factory.”

CHAPTER TWELVE

THE STORY OF BILL JONES

DAN REYNOLDS slowly refilled his pipe.

“Are you getting tired, youngster?”

“Not at all,” said Eric eagerly.

Dan smiled. He was evidently in a mood for story-telling.

“Take the history of Bill Jones, the greatest steel man who ever lived. If it hadn’t been for him there probably wouldn’t be any steel to-day — at least not the kind of steel we know. And yet they never think of Bill Jones when they are putting up monuments and talking about who ought to go into the Hall of Fame.

“They tell me you can still see the house where Bill lived when he was a boy back in Catasauqua, Pennsylvania, one of the Carnegie steel towns. Bill’s father was a pattern maker who had emigrated from Wales, and Bill went to work in the mill when he was ten years old. In the mill towns of those days the boy of ten who wasn’t working was looked upon as

a failure in life, and a disgrace to his parents. From all accounts Bill must have been a good bit different from the other youngsters of the neighborhood. His father was a quiet, sober man, given to reading religious tracts and histories at night, and Bill used to lie on the floor for hours spelling out the big words. But the reading didn't have any effect on him in one way. He had the name of being the most reckless boy in town. One day he cut off his thumb-nail to see what was underneath.

"When he was eighteen, Bill moved to Johnstown, then one of the big iron centers of the country, and worked up to foreman in the Cambria mills. There was nothing to mark him as any different from other mill men at this time, except his good nature. Often he would stop work and take his whole force to see a ball game. Along about this time the Kelly or Bessemer way of making steel was introduced in this country. England was then the center of the steel trade. She was making as much steel in one year as we did in four years. I guess Bill's books helped him to learn the new method, and understand what it meant. At any rate it wasn't long before he was saying coolly that

he thought he could improve on it. They all laughed at him; but when Andrew Carnegie took over the new steel plant at Braddock he heard of Bill's boasting, and offered to give him a chance to show what he could do. Carnegie was always looking for men who thought they could do something better than other men.

"In his first fifteen weeks at Braddock, Bill Jones' new ideas, which the workmen at Johnstown had laughed at, turned out twice as much steel as the plant had ever been able to make before in the same time, and at the end of a year he was making as much steel in one week as the other mills in the country were producing in six weeks. In one day the converters at Braddock, with Bill Jones' improvements, were producing over six hundred tons,—more than thirty thousand dollars' worth.

"The English steel-makers called the story of Jones a fairy tale. When the British Iron and Steel Institute met in 1881, someone suggested that the 'crazy American' be invited to make a written statement of what he was doing. So it came about that Bill Jones in his greasy overalls received a high-sounding note with an engraved heading, and signed by a man

who wrote ‘Bart.’ after his name. I reckon Bill’s book-learning told him what it meant. At any rate, he put in his evenings answering the letter. It was what might be called our industrial declaration of independence. It informed England that she no longer led the world in steel, and that in future she was to be second to the United States.

“Bill Jones was just beginning to find himself. It was as though he was pouring out every day a river of gold. When one shift of men finished, another shift took its place. The output of steel ran up to twenty-five tons an hour for every hour of the day and night. As fast as Bill saw where he could make an improvement, he had the old machinery torn down and thrown in the scrap heap. Several times he destroyed half a million dollars’ worth of equipment. By this time the great Carnegie Steel Company had come into being, and Bill was being paid twenty-five thousand dollars a year. But he still wore his overalls and carried his dinner bucket, as though he were working for day wages. Carnegie offered him an interest in the company, but Bill didn’t want it. ‘I am not a business man,’ he said, ‘I’m a steel man.’ He

could have been a millionaire by simply saying ‘Thank you.’

“When I worked in Bradford, Bill would storm up and down the shops something like this: ‘Do you get enough fresh air in that corner, Joe? If you don’t, I’ll have a window put in for you!’

“Or, ‘See here, Smith, if you don’t pay your debts, you can’t work for me. You settle with that grocer of yours, or I’ll find out why.’

“Or, ‘When you are going home to-night, Jim, take this piece of paper to Jack Sullivan’s wife. Jack died in the hospital last night, and she has five children.’ The piece of paper was a deed to the cottage where Mrs. Sullivan lived. That was Bill Jones. When they made his salary fifty thousand dollars a year, I don’t think Bill ever thought of it. He was too much interested in making steel.”

Dan Reynolds paused. When he continued, there was a little catch in his voice.

“I will never forget the day that Bill was killed. One of the furnaces had gone wrong — ‘bridged up,’ as they call it in the mill. That is, the metal inside had been jammed up, and of course the furnace was out of commission until

the jam was broken. Bill was leading a gang that was trying to put the furnace in running order, working side by side with a Hun at a dollar and a quarter a day. Suddenly the ‘bridge’ gave way, and the red-hot metal that had been caught underneath crashed clear through the outside wall. The men at the side of the furnace jumped back in time to save themselves, all except two. One was Bill Jones, and the other was the Hungarian workman at his shoulder. I guess, maybe, if Bill had been asked how he preferred to die, that is the way he would have chosen — on the firing line.”

For several minutes Dan Reynolds was silent. Had Eric been a student of psychology he would have realized that the silence was a more eloquent tribute to the memory of Bill Jones, steel-maker, than a flowery oration. Finally the boy ventured dubiously, “With the tremendous output of iron and steel every year, won’t we soon have more than the world can use? Won’t the demand be exhausted, and the mills have to stop?”

“That is the question the steel men used to ask themselves twenty years ago,” said Dan, laughing. “And yet we have more than twice

as many mills and furnaces to-day as we had then. Mr. Radcliff gave the men at the plant a series of lectures last winter. He said that a new use for steel is arising every day. I remember he said that if all our six hundred rolling mills were arranged in a circle around Pittsburg, for instance, that the circle would be more than a hundred miles in diameter. Inside this circle we could put another circle three quarters as large, comprising our five hundred smaller mills and our three thousand puddling furnaces. Our six hundred open-hearth plants would give us another circle fifty miles across — and our four hundred blast furnaces would make still a fourth circle thirty-five miles in diameter. But we are not done. In the center we would have a hub of fire, from our three hundred Bessemer furnaces, a mile around, and pouring out a river of steel at the rate of over two million pounds every hour of the day and night. And even this is not enough to supply the demand.

“It is only a question of time until the railroads will have to buy steel ties as well as steel rails. The Baltimore and Ohio, New York Central, Erie, Lake Shore, and Pennsylvania are al-

ready adopting them. The railroads buy one eighth of all the steel produced, and a ton of steel ties will only go about half as far as a ton of steel rails.

“Steel cars are coming into service, replacing the old wooden ones. One company has sold fourteen million dollars’ worth of pressed steel cars in six years. Only a short time ago the Erie Railroad adopted the first steel baggage car in this country.

“Then there are the cities of the future. They will be built of steel instead of wood or brick or stone. What we call ‘expanded steel,’ a sort of thin mesh, is even replacing laths in the building of houses. We are making our factories of corrugated iron instead of brick. In Germany the first absolute ‘fireproof’ building material has been patented—a combination of steel and cement. The big fires that have swept our cities in the last ten years show that a steel frame for a building is not enough. Wood must be eliminated entirely. Several steel churches have been erected, made wholly of steel, and stone, and cement. The great subway in New York City is a thirty-mile tube of steel and cement, and the elevated railroad

is a thirty-mile steel bridge. And the time is coming when every large city will have to put its transportation system either under the ground, or overhead. In a big skyscraper, ten thousand tons of steel are used, and we are putting up a new skyscraper nearly every week.

"Take just one item of steel manufacture — wire. Do you know that there are twice as many millions invested in wire as in structural steel? The day is coming, Mr. Radcliff said in his lectures, when wire will require more of the output of the steel mills than even rails. Out of every ten pounds of steel manufactured, one pound is made into wire. Just think of the thousands of uses of wire! In one cable of the Brooklyn Bridge there are over six thousand separate strands. We can make the cage of a tiger from wire, or we can build a piano from it, or we can make it into the hairspring of a watch. In one year the cotton dealers pay two millions and a half for binding strips for their cotton bales. One factory in Chicago produces three million pounds of wire carpet tacks in a year. In one month this country uses over one million kegs of wire nails.

"Getting back to the general field of steel, the profits of a single order of a big steel mill may mean a fortune. Take the new five-hundred-foot steel dry dock at New Orleans; the wonderful steel chimney of the Nichols Chemical Company of Brooklyn, over three hundred feet high; the Manhattan Bridge; the new engine of the United States Steel Corporation at Youngstown, weighing over one million pounds; the three flumes that have been laid at Niagara Falls, eighteen feet in diameter and a mile long; James J. Hill's new steel elevators at Superior, Wisconsin, each with a capacity of three million bushels of grain.

"We are making nearly two hundred steel bathtubs every day. Steel furniture factories are being built. Thousands of our barrels are coming from the steel mill instead of the cooper-shop; and as we use three hundred million barrels a year you can see the market for the steel mills. Four blocks of steel roadway have been laid in New York City, and the president of the American Automobile Association says that eventually there will be such a road all the way from New York to San Francisco.

"And these are just a few of the uses of steel. Should there ever be another great war, the steel mills would be hopelessly swamped under their orders. The deciding agents of that war would not be generalship, or fighting qualities, but money and steel. In their assault on Port Arthur the Japanese fired two thousand tons of shells. That single engagement cost Japan and Russia over sixty million dollars — most of which went to the steel and iron makers. The death of every soldier at Port Arthur cost more than his weight in iron.

"No, youngster, I guess there is no need of your worrying about the market for steel giving out. There is one plant in Chicago that makes seven steel rails a minute. Every second of its operation means a revenue of one dollar and a half.

"Do you know that high-grade steel is more costly than either gold or silver? Watch-screws, for instance, are worth \$1,585 a pound, and hair-springs \$3,000 a pound. We would have to pay about twenty-five pounds of solid gold for two pounds of these nine-inch threads of steel.

"On the other hand, a great steel plant requires an investment of millions before it can

even begin operations. Some of the figures that Mr. Radcliff gave us along this line made us stare. A million dollars is a tremendous sum of money, but it would cost ten millions to start in the steel business even in a small way. The Lackawanna steel plant in Buffalo cost forty million dollars to equip. Some of its machines cost as much as a skyscraper. Its gas engines alone meant an investment of nearly one million dollars apiece."

Eric drew a deep breath. Dan Reynolds was right. Compared to the story of Steel, "The Arabian Nights" was thrust to the background. And the story of Steel was a *true* romance!

"I suppose," he said thoughtfully, "that new inventions, new ways of doing things, must be coming up in steel-making all the time."

Dan nodded.

"Some day the steel companies will join together in a department of invention and experiment for the trying out of new ideas. Take the 'dry blast' experiments. The air that is blown into a blast furnace in the course of an hour contains from forty to three hundred

gallons of water. This, of course, eats up coke and reduces the heat. Vice-president Gayler of the United States Steel Corporation is working on a plan to carry the air current first through an ammonia chamber, which draws out the moisture in the form of frost. When the ammonia chamber is clogged with frost, a sort of dry, hot brine continues on into the furnace. Already the new idea has been developed to a point where it produces twenty per cent more steel in a day than the old methods.

“And then there is the electric smelter. This was Kelly’s dream. He believed that steel can be made direct from the ore, without either the blast furnace or the converter. Already the electric furnace is being used, but it is too expensive to be practical for general purposes. The Canadian government has appropriated fifteen thousand dollars for experiments along this line, and Edison is spending a large share of his fortune in the same direction. If it is ever a real success, it will revolutionize the steel industry. The electric smelter is hardly larger than an ordinary bake oven, and can be carried from place to place like a saw mill. It could* be set up at the mouth of an ore mine and make

the ore into high-grade steel as fast as it could be brought to the surface.

“Quality, not quantity, is coming to be the goal of the steel mills. We can make enough ordinary steel, and now we are trying to make better steel.”

“Is that what ‘Silent’ Battles is experimenting for?” asked Eric suddenly.

Dan’s eye closed with a motion expressive of a wink.

“That is the company’s secret. But to tell the truth, I don’t know. I might guess. We all have done a good bit of guessing, and from all accounts there are those who have tried to do more. But when it comes down to facts—”

Eric tried to conceal his disappointment. He would have been a very much amazed youth had he known how soon and under what circumstances he was to be ushered into the secret of “Silent” Battles — and what an effect it was destined to have on his life.

CHAPTER THIRTEEN

GRAZING DEATH

IN the office of a certain famous manufacturer there hangs a battered dinner bucket. A friend once laughingly asked the explanation of its presence.

“That is one of my most cherished possessions,” was the answer. “It is the pail in which I carried my lunch on my first job.”

Had Eric Raymond paused to define his thoughts on the morning on which he tumbled out of bed to the tinkle of the alarm clock, set at half-past five o’clock, and realized that in just an hour he was due at the American steel plant to begin the first day in his new life, he would have appreciated the sentiment. On the kitchen table rested the pail in which he had carried his mid-day lunch the previous summer at the tool factory, and the servant girl, whom Mrs. Raymond had been obliged to employ until she could resume her household duties, was fastening down the lid as he

entered the room. The pail seemed to blink a cheery welcome to him, for all the world as though it was saying, "Well, here I am again, all ready for duty, you see. And I know as well as you do that I am going on something more than a vacation job *this time!*"

Mrs. Raymond was already awake when he stole a glance into her room, with his cap in his right hand and his bucket hung over his left arm.

"Isn't this a little early for you, Mumsy?" he laughed.

"Do you think I would let you go off on your *first* morning without saying good-by?" protested Mrs. Raymond. "Why, you look just like a real working man!"

"Wait until you see me to-night! You may have to order an extra supply of soap before you will be able to recognize me."

Mrs. Raymond drew him over and kissed him. As the boy straightened he knew that his mother's lips were moving in a whispered prayer.

The Raymond cottage was not located in the steel-mill district, and it was not until Eric had covered half a dozen blocks that he met the stream of workmen hurrying toward the Amer-

ican mills. He fell in beside them, conscious that several curious glances were directed toward him. He returned the glances with a lively interest, hoping to find Dan Reynolds in the throng. But the foreman was not there.

He fancied, however, that he caught sight of a familiar figure just ahead, and quickened his steps as the figure turned. It was the Hungarian ladle-sculler of furnace No. 11. The other recognized Eric at the same moment, and a shy grin spread over his face.

"Good morning!" said Eric, to test his companion's knowledge of English.

Rather to his surprise, the young Hungarian appeared to understand him easily. "Morning!" he answered somewhat haltingly. "You and me, we are to work together, yes?"

Eric nodded as he fell into step. "That is what Mr. Reynolds says. My name is Eric Raymond. What is yours?"

The grin again spread over the young Hungarian's face. "My name, it is Walter Stelmaszyk." He showed two rows of very white teeth as Eric tried to pronounce it after him.

"Have you worked in the mills long?" continued Eric, laughing with him.

"Fourteen, fifteen months. I like it, like it very much. My brother, he worked here before I come, but he was killed last month in rail mill. Rail mill very bad place!" The boy shuddered expressively. Eric saw, now that he had opportunity to observe him closely, that he was very little older than himself.

"You and your brother were here alone?" he asked sympathetically.

"Yes. We had the same room. Now I have it with Anton Pietszak. He is a sample boy at the blast furnace. But I don't care for him much. He spends too much time at Lazich saloon. I go to night school twice a week. But he say too much trouble. Some day maybe"—the boy's eyes brightened—"I be a ladleman."

Eric glanced at him with renewed interest. For the first time he realized that ambition is much the same all the globe over. Somehow he had always thought of emigrants as beings of another world, not to be judged by the same standards of life that he knew.

During their conversation the two had been approaching the brown mountain of smoke of the steel plant. Eric followed the guide of

his companion, received his instructions from the timekeeper as to how to register his number on the time clock, saw his name entered in a voluminous day book, and, smiling at Walter Stelmaszyk, fell in behind him as the young Hungarian led the way to the wash room of the open-hearth building, where the workmen left their coats and hats and dinner buckets.

Dan Reynolds was already at his post before the bubbling caldron of No. 11. He greeted Eric with a bright nod, and motioned to Walter Stelmaszyk to take him in charge. Evidently the foreman was too occupied in his supervision of the furnace to pause.

"Another 'run' is starting," explained the young Hungarian as he surveyed rather ruefully the condition of the ladles and prepared to initiate Eric into the mysteries of their cleaning. "The night shift finishes its 'run' before it leaves. And the ore is always bad when it first begins to cook. And the fire has to be fed all over again, too. It won't be so bad after a bit," he said encouragingly as a cloud of hot, biting gas from the simmering metal sent Eric back coughing violently. "It gets me at first, even now. Come over here to

this side. That gas is not good to breathe. It has an evil spirit."

The "evil spirit," although Eric did not know it at the time, was real enough. It was the insidious grip of lead, or mercurial, or arsenical poisoning — the dreaded roots of the so-called "occupational diseases" of our great industries. In its way, the menace of industrial poisoning in our factories is as great as the peril of dangerous machinery. And it is more insidious, because it is often invisible, springing up where the uninitiated would never expect to find it. One would not associate danger, for instance, with the umbrella maker, or the linoleum manufacturer, or the felt worker; and yet the gas and acid fumes, over which the workmen are constantly bent, constitute a very grave danger of fatal infection. And this danger is even more pronounced in the steel mills, where the huge vats of bubbling metal hiss and boil like the devil's own caldrons. Lead poisoning, mercury poisoning were the explanations of the grotesquely twisted limbs that Eric had noticed in the crowd of workmen on the occasion of his first application for a job. Or perhaps the poison fumes struck

down their victim with that strange disease, the "bends," which creeps into the spinal muscles and doubles up the unfortunate workman like a jack-knife.

It did not need the friendly caution of his ladle mate to keep Eric from the hot fumes of the furnace. His first inhalation of the stifling gas cloud was effectual warning. For an hour afterward his lungs ached like those of a diver who has been too long under water, and his eyes stung like hot coals. The smoke, seeping to every crevice of the building, did not improve his condition. For a moment he was tempted to ask Dan Reynolds for permission to stagger to the door for a breath of fresh air—anything to escape from the torment of the smoke. And then he compressed his lips. He was paid to keep to his job. If the other workmen in the plant could withstand the fumes, he was expected to do the same. But that hour stood out in his memory like the span of a nightmare.

Although he did not realize it, Dan Reynolds, in spite of the demands of the furnace, found time to watch him closely out of the corner of his eye. Once the foreman even

stepped back to find an excuse to send his young helper into the yard. Even as the thought occurred to him, however, he abandoned it with a grim shake of his head. He had been through the same ordeal himself, and knew that it is part of the training of every steel worker. If the boy was to make good — and Dan was already conscious of a curious interest in the lad — he must fight his battle for himself. It was not until he saw that Eric had overcome his first faintness and was beginning to bend to his task with a real interest that he motioned him over to his side.

“Take this sample over to the laboratory. You will find it across the yard. Ask them to test it for silicon, and report.”

The errand required only a few minutes, as the laboratory, a small square building, devoted to the chemical tests of the plant, was only a short distance from the open-hearth mill. The escape from the heat and smoke of the furnace, brief as it was however, gave the boy a chance to fill his lungs again with the crisp morning air. Had he been given time to linger, Eric would have found much of interest in the laboratory, with its array of spattered

tables, and test tubes, and retorts, and queer-colored gas flames. It was the first time he knew that a steel plant had such a feature as a laboratory.

Later he came to realize that it was one of the busiest departments of the mills, and one of the most important. Making steel is a science whose success depends on its accuracy. Many of the orders of the steel mill read with the exactness of a druggist's prescription. Here is a sample:

"Send five thousand tons pig—2 per cent carbon, less than 0.1 per cent phosphorus, $2\frac{1}{2}$ per cent silicon, and no sulphur."

And the marvel of the steel industry is that such an order is not filled in ounces or pounds, but in tons, and is not the product of human hands, but of machinery.

Eric soon found that the mastery of his own task was not at all difficult. Had it not been for the heat and smoke it would have been comparatively simple. His love of outdoor sports, and the autumn days on the high-school football field, stood him in good stead, although the unaccustomed strain on his muscles was already beginning to make itself felt. When

the noon whistles finally blew and Dan Reynolds led the way to the wash room and the dinner buckets, Eric received the interlude gratefully. It was not until he rose from the bench in the yard to return to the furnace that he realized that every nerve in his body was aching. He smiled ruefully as he rubbed his throbbing muscles.

"Stiff?" laughed Dan. "You'll soon be over that. It will pass off in two or three days."

Eric tried to laugh back. Two or three days! As a prophet of encouragement, Dan was scarcely a success.

It was perhaps two hours later that a boyish voice, calling his name, reached Eric at the side of the furnace. As he rose from the ladle, over which he was bent, and stared through the smoky gloom of the building, he recognized Homer Fordham. The lad was accompanied by a young man who kept one hand on the arm of his young charge as though fearful that the floor might open without warning and swallow him. It was easy enough to divine that he was Master Fordham's tutor, and it was also apparent that he was finding his present task not at all to his liking.

"Hello!" called Homer. "Come over here, can't you?"

Eric glanced at Dan Reynolds; but the foreman was evidently too engrossed in his study of the furnace to notice the incident. Somewhat hesitatingly Eric obeyed. Homer held out his hand.

"Better not," said Eric laughing, looking down at his grease-caked palm.

"Oh, bother the dirt! I wish I could be really dirty just once!" And Homer shook his hand heartily, while his tutor stared in horrified astonishment. "I say," he continued, "I didn't know you were going to work here. I thought you wanted a place in the office."

"No, indeed. There is only one way to learn to be a real steel man, and that is in the mills."

Homer's eyes sparkled, while his tutor surveyed Eric through his eyeglasses. It was quite evident that he didn't fancy the example set his pupil. "Don't you think, Master Homer, that it is time we are going? I fear your father will begin to worry."

"Do you like it in the mills?" the boy asked Eric as his tutor took off his glasses and polished them nervously.

"As this is my first day, it is a little too early to say," said Eric smiling. "Just now I am so stiff that I feel I would never get over it; but Dan Reynolds — he is the foreman over there — says that won't bother me long. And then you have got to get used to the smoke and heat; but there wouldn't be much steel made without them, I guess. Have you ever been here before?"

"Once, but I am going to come down often now; that is, if father will let me. Burke thinks it is great. Don't you?" he asked, turning to his tutor. The latter cleared his throat dubiously.

"Of course, such visits *occasionally* have a certain practical advantage for you, no doubt." He tightened his grasp on Homer's arm. "Really, Master Homer, I must insist that we take our departure. There is that Latin exercise to be finished, and after that —"

"All right," said Homer rather ungraciously. "But I'd like to know what good Latin is going to do me if I am ever to take the governor's place here at the plant. When are you coming to see me again, Eric?"

Eric flushed. "You can see I am going to be

pretty well occupied. I am afraid it will be hard to promise."

"Oh, all right, if you don't want to come," said Homer coldly. Eric smiled in spite of himself as the boy turned away. It was quite evident that Master Homer was a young gentleman accustomed to having his own way.

Eric was still smiling when he glanced up and saw Dan Reynolds surveying him curiously, and then he realized suddenly that, in spite of his seeming abstraction, the foreman had been watching the whole incident.

Dan stepped over to his side. "You didn't tell me that young Mr. Fordham was such a friend of yours." There was a new note in his voice, almost of suspicion.

"I could hardly call him a particular friend," Eric evaded, wondering at Dan's tone.

"And perhaps you know President Fordham, too?"

Eric flushed. "And what if I do?" The next moment he regretted the words. Dan turned back to his work without replying, but there was a suggestion in his attitude that had never been there before. Eric stiffened his shoulders as he stepped over to his ladle. Why should

the fact that he knew President Fordham cause such a change in Dan Reynolds? And why should he be subjected to such a sharp catechism on the subject? The foreman was acting as though he had come into the mills in an assumed character, which had suddenly been exposed.

Eric was still pondering the situation when Dan rather sharply sent him over to the laboratory again with a sample of steel. Buried in his somber speculations, the lad discharged his errand and reentered the open-hearth building. He had covered perhaps half of the distance to furnace No. 11 when a sudden shout from behind him caught his ear.

Mechanically the boy came to a halt as the shout was repeated. And then above him he was conscious of a hot, hissing cloud, and the smoky gloom was illumined with a burst of bright yellow sparks, like a score of skyrockets discharged all at once. Eric felt his feet riveted to the floor as the meaning of the situation came to him.

From the roof loomed the mass of a hundred-ton electric crane, with its chains caught about a pot of burning slag. Something had

gone wrong with the mechanism. The grip on the great pot had been broken, and it was tilting toward the floor in spite of the desperate efforts of the craneman to check it. And as it tilted, its burst of bright yellow sparks deepened to a dazzling red, like a great red sun, a sudden roar crashed through the building, and even as Eric realized that the slag pot, with its molten torrent, was directly over his head, he felt himself flung violently to the floor.

But it was not the stream of suddenly escaping slag that had caught him. In that instant a pair of arms had flung themselves around his shoulders, lifted him as though he had been a child, and literally tossed him half a dozen feet away.

For a moment Eric lay where he had fallen. To his whirling senses it seemed as though the building were swaying around him, swaying in clouds of hot, dizzy gas. He tried to raise his hand to shield his eyes, and then the arms which had closed over him before picked him up again, and he knew that a man was stumbling with him to the door.

His next coherent thought was of a cup of water forced to his lips, and he drank it fever-

ishly, grateful for its cooling effect on his parched throat. The water helped to steady his whirling head, and he opened his eyes.

Over him was bending a gray-haired man with a gaunt, strangely stern face, and the thin blue thread of a long-healed scar on his right temple, vanishing in his thick hair. He was regarding the lad through a pair of speculative gray eyes. It was "Silent" Battles.

Eric struggled to his elbow. "I—I think I am all right now." He paused, staring. Without a word, "Silent" Battles turned on his heel and walked off across the yard.

The next moment he opened the door of the iron-shuttered brick building, where he labored at his secret task, and without looking back closed it after him.

CHAPTER FOURTEEN

THE LAIRD OF SKIBO

ERIC managed to reach his feet with less effort than might have been expected after the shock of his experience. With a few steps forward, however, he was glad to pause and hold to the side of the building. His left arm was badly bruised, and his head was still throbbing feverishly. From the door of the open-hearth mill the clouds of gas from the overturned slag pot still poured. As the boy glanced dubiously ahead, uncertain whether to venture farther, Dan Reynolds sprang through the doorway.

At the sight of Eric's white face he caught his arm and led him to a bench at the side of the building. In the tension of the recent accident, the foreman's sudden coldness had vanished. He bent over the lad with rough sympathy and brought him another cup of water.

"You have had a narrow escape, youngster!"

If you work forty years in the mills you will never have a closer call!"

"Will you tell me what happened?"

"There isn't much to tell. There never is in a steel-mill accident. It is generally all over in less time than you can describe it. I guess the chains of the slag pot slipped. Maybe one of the 'lugs' tore loose. It is hard to tell exactly until an investigation is made."

"And — and was anybody hurt?"

Dan hesitated. "A ladleman by the name of Fuerlant is missing. There are fifteen tons of slag on the floor, and they haven't been able to reach him yet. Hot slag is hard to handle — when it is out of the pot."

"And he is under that burning metal?" Eric glanced at Dan with a shudder.

The foreman nodded. "He was probably killed instantly."

"And if it hadn't been for 'Silent' Battles I would be there with him!" Eric gasped. The world seemed suddenly to swim around his ears. He gripped the side of the bench in an effort to force back the weakness that was pressing upon him.

"I guess that is about the size of it," admitted

Dan soberly. "But a miss of an inch is as good as a mile, you know," he added with an attempt at cheerfulness. He turned back to the building. "I reckon you had better stay out here for a bit, youngster, until you get a hold on yourself. Or maybe I had better send you home?"

"No, indeed!" Eric shook his head, with a swift vision of his mother's alarm if she should hear of the accident and his narrow escape. He must keep the incident from her knowledge, if possible. "I think a few minutes in the fresh air will fix me all right."

The accident had occurred within less than an hour of the day's closing time. When Eric recovered himself sufficiently to struggle to his feet again, the whistles were blowing. The blasts were followed by Dan Reynolds and Walter Stelmaszyk.

"We'll walk as far as your gate with you, youngster," said Dan kindly. "And if you find you can't make it, we'll call a carriage."

Eric made it, however. In fact, the walk aided to clear his throbbing head. When he parted from his companions and entered the Raymond cottage, he was able to muster a smile that was almost cheerful. So successfully did

he conceal his condition that when shortly after supper he tumbled into bed he had the satisfaction of feeling that his mother did not suspect how nearly a tragedy had grazed the household.

Although Eric limped to the breakfast table the next morning, and his left arm was painfully swollen from its bruises, he was vastly better than he might have anticipated, and when he reached the mill was able to resume his work with a vigor which Dan said "was worth a dozen dead men." The litter of the spilled slag had been cleared away overnight, and the broken "lug" of the pot, responsible for the accident, repaired. Except for a new face among the ladlemen, replacing the man who would never report for duty again, there was no indication of the recent tragedy.

Eric was surprised to find, too, that there was no reference made to the incident by the workmen. The mill seemed to take it as a matter of course in the day's work.

In the noon hour Eric made his way across to the "House of Secrets" and hesitatingly knocked on its forbiddingly shuttered door. He was about to turn away when there was the

sound of a heavy bar being removed from behind it, and it was opened a scant three or four inches. Through the aperture peered the stern face of "Silent" Battles.

"I am sorry if I disturb you," began Eric hurriedly, "but I want to thank you for what you did for me yesterday. You — you saved my life!"

For a moment the face behind the door surveyed him in silence. Eric saw now that in spite of the stern cast of the features there was something compelling, almost fascinating, in the strangely silent man, a suggestion of rugged power. And with his closer view, he saw, too, that there was nothing repelling or morose in the face, but rather the shrinking reserve of a man who withdraws from the world through preference, and not bitterness.

"You are the boy I assisted in the open-hearth mill yesterday?" asked "Silent" Battles, slowly and with a certain curious distinctness in each word.

Eric nodded. "And I want you to know that I am very grateful for what you did for me!"

He felt the gray eyes in the doorway regarding him gravely. He could almost fancy a

suggestion of surprise in them, as though their owner was at a loss to understand why he should feel it necessary to thank him for the service.

"I am sure, young man, that I was glad to be of assistance."

Eric stepped back awkwardly, and then the door was closed, and he heard the bar on the other side drop back into its place. His interview with "Silent" Battles was over!

That evening, as Eric walked with Dan Reynolds from the mill, he decided suddenly to take the foreman into his confidence regarding the curious manner in which he had earned the favor of President Fordham. Dan listened with a silent astonishment that was prolonged until after he had finished the story.

"I owe you an apology, youngster," he said finally.

"An apology?" repeated Eric, surprised in his turn. "What for?"

"Do you mean to tell me you can't guess?"

"No, I can't say that I can."

Something like a twinkle stole over Dan's face. "Then I think I won't explain for the present. But I am very glad that you have

told me what you have. Why, it sounds just like one of those story-books from the library."

Eric finished his walk home, puzzling over Dan's words. Why should the foreman be "glad" at the explanation he had given of President Fordham's friendship? Why should Dan say that he owed him an apology? He was to receive an answer to his questions sooner, and in a more startling fashion, than he would have anticipated.

A week passed. His first pay day at the mills came and went, and he had the satisfaction of carrying a little brown envelope marked "Eric Raymond, ladle-sculler, \$7.50" to his mother, and ordering her to close her eyes and open her hands as he dropped it onto the bed.

He had not seen "Silent" Battles since the noon on which he had invaded the "House of Secrets." The little iron-barred building might have been devoid of tenant had it not been for the smoke curling lazily up from its slender chimney. The week had accustomed Eric more easily to the smoke-darkened atmosphere of the mills, and he was even growing

used to the heat of the furnaces. The stiffness had gone entirely from his muscles, as Dan Reynolds had prophesied, and he had reduced the evening operation of scrubbing the day's grime from his hands and face to almost a science. He had never realized before the luxury of warm water and soap.

It was at the beginning of his second week that, as Eric was leaving the mill for his home-ward walk, a voice hailed him, and he turned to see Mr. Radcliff behind him.

"Hello, there!" greeted the superintendent cheerily. "I guess I am going your way. Suppose you walk with me?"

"Thank you!" said Eric, somewhat awkwardly. Mr. Radcliff smiled as he fell into step beside him.

"Well, how do you like sculling ladles?"

"How did you like it?" asked Eric, and then flushed at his boldness.

Mr. Radcliff laughed. "To be honest, I can't say that I was overly enthusiastic with the job — but the hard job is sometimes a blessing in disguise. My three months of ladle-sculling, as I look back now, did a great deal for me. It taught me for one thing to

submit to the drudgery of mechanical labor — it broke me into the harness, as it were."

"And then there is the fascination of the furnaces and machinery," broke in Eric enthusiastically. "Why, the mill is just like a call to battle!"

"I see the steel microbe has found a lodgment in your blood," smiled Mr. Radcliff. "I wonder if you know anything about the other side of steel — the business side," he went on as he noticed the boy's sparkling eyes.

"You will find that the romance of the steel industry is not confined altogether to the furnaces and machinery. We call the history of steel the story of a thousand millionaires. This is almost literally true, and the amazing part of it is that most of these successful men know the day when they worked in overalls and carried dinner buckets. Take the story of Andrew Carnegie —

"When he was fifteen years old, Andrew Carnegie's first red-letter day dawned. He was working in an Allegheny bobbin mill — a damp, cold cellar — so damp and cold that it seemed impossible for the hottest sun to reach it; and the spot that he called home was

a dingy frame cottage in a back alley street. His red-letter day came when a friend of his father's, who had emigrated from Dunfermline, Scotland, and learned the telegraph business, offered him a job as messenger boy in the Pittsburg Western Union office at three dollars a week. Three dollars a week! To young Andy it meant an advance of a dollar a week over the wages he was receiving in the bobbin mill.

"The telegraph office has always been a great boy developer. The demands on the young messenger, often with a telegram of life or death to deliver, quicken his wits, spur his mental powers, teach him a self-reliance and an ability to think for himself far beyond his years. On the messenger bench in the Pittsburg office were three other lads, in addition to Andrew Carnegie, who were destined to become famous. It is extremely doubtful, however, if the most sanguine observer would have picked among the freckle-faced, sharp-eyed youngsters, waiting for the next call from the desk, the future city attorney of Pittsburg, William C. Moreland, or the coming superintendent of the Alleghany Railroad, David

McCargo, or the embryonic manager of the Pennsylvania Railroad, Robert Pitcairn. And it is certain that the observer would have passed the boy called Andy Carnegie without a suspicion that he was some day to be hailed as the world's Steel King.

"In the intervals of his messenger service Andy found himself attracted to the clicking telegraph instruments. Gradually he mastered the rudiments of the Morse code. One day, in the absence of the operator, a message came clicking frantically over the wire from Philadelphia. A rule of the office forbade the boys from touching the instruments, but without a thought of the rule Andy jumped to the pounding receiver and wrote out the telegram. Now it is quite conceivable that his action might have ended in a prompt dismissal from the office. It happened, however, that there was a vacancy in the staff of operators, and Andy was promoted to the vacancy, at a salary of twenty-five dollars a month, instead of being discharged.

"At the age of nineteen came his next chance, when he was given a post as operator in the offices of the Pennsylvania Railroad under

Colonel Thomas A. Scott. It is a far cry from an obscure railroad telegrapher to steel multi-millionaire, and probably to no one would it have seemed farther than to young Andrew Carnegie. We must bear in mind that he was absolutely unknown, without influence, and with nothing at all to distinguish him from the dozen or other operators in the office. That is, nothing *apparently*. Let us see how his hidden qualities first came to the surface.

"One morning that most dreaded dispatch of a railroad line, the announcement of a wreck, came flashing into the office. Colonel Scott was absent, and it was evident that without prompt action the road would be badly tied up. When young Carnegie found that Colonel Scott could not be reached, a daring inspiration came to him. Rapidly he wrote a dozen messages to the officials in the neighborhood of the wreck, signed each 'Thomas A. Scott,' and in a few hours had cleared the line and prevented a costly blockade. When Colonel Scott returned he sent for the young man who had used his name with such effect, and promoted him to the post of his private secretary. It was a post which gave Carnegie's

wonderful business instinct its first chance to show itself.

"Of course, such a position brought the young secretary into intimate contact with the financial world.

"When he was twenty-eight, Carnegie was made superintendent of the Pennsylvania Railroad, succeeding his old chief, Colonel Scott. About this time, too, he first embarked in the iron and steel business, buying with his savings a sixth interest in the Iron City Forge Company, which made a specialty of manufacturing axles. Before long his interests demanded so much of his time that he resigned his position with the Pennsylvania Railroad — a position which the average man would have thought a fit reward for a lifetime of effort.

"It is a remarkable fact that although Carnegie grew to dominate the steel industry he was never a practical steel man. He knew little of the mechanical side of the business. His partners always supplied the technical knowledge. His work came in selling what they made, in finding the right market for their product, in creating a demand for it. Of the partners in the first Carnegie iron and

steel enterprise, the forge company, none was over twenty-seven years of age. Henry Phipps, one of the group, had begun life as errand boy in a jeweler's shop, and by studying evenings had worked his way up to book-keeper in a spike mill. When the company was in its infancy Phipps kept his job in the spike mill, and in the evenings walked three miles to the plant to post up the books for the day, and then trudged back home. There were no street cars; and if there had been it is doubtful if he could have afforded the ten cents for his fare. Those first years of Carnegie in the steel business were by no means rosy ones. This was just after the Civil War, when ready money was at an exorbitant interest, and the country was readjusting itself to new conditions. Often it was necessary to mortgage the iron ore, brought down from the Lakes, to raise money to pay off the workmen; and then the loan had to be liquidated before the furnaces could be supplied.

"In the year 1872 Carnegie received a letter from his former employer, Colonel Scott, asking him to call at his office. The letter proved a turning point in the young ironmaker's career.

“‘Can you sell six million dollars’ worth of bonds for the Pennsylvania Railroad?’ he was asked.

“‘I can!’ was the confident reply.

“The Pennsylvania was building a branch road in Iowa, and it desired to sell the bonds in Europe for the necessary expenses. Carnegie packed the six million dollars’ worth of engraved paper in his valise, and took the first steamer. With such enthusiasm did he present the value of the bonds to the investors of London and Paris that within six weeks he had sold every dollar’s worth, earning for himself as commissions one hundred and fifty thousand dollars. The sudden windfall enabled the iron plant to round the last of its jagged financial corners. Just what would have happened to the enterprise had it not been for this stroke of fortune has always been something of a problem.

“Up to this time the company had been producing only iron. The Kelly and Bessemer converters were still comparatively unknown propositions, and the making of steel was regarded as too uncertain and hazardous a venture for large financial returns. In fact, when Carnegie first heard of the new invention he

advised against its adoption. ‘Pioneering does not pay a new concern,’ he said. ‘Wait until the process develops!’ It was not until he stood before a Bessemer converter in full blast during a trip to England that its possibilities took hold of him. As he stood under its showers of orange and yellow sparks, the germ of the great steel corporation of the future seized him. He hurried home as fast as steam could take him. Henceforward there was nothing for him but steel. In the burst of his enthusiasm he reorganized his plant and threw every dollar he could gather into its development. In the course of ten years the Carnegie company was making one seventh of all of the Bessemer steel in America.”

Mr. Radcliff broke off his narrative abruptly, with a hasty glance at his watch. During his story the two had walked a number of blocks beyond the point where Eric usually crossed off to the Raymond cottage. In his interest in the superintendent’s talk, however, he had never noticed the fact.

“Why, I have been talking for nearly half an hour!” said Mr. Radcliff ruefully. “Why in the world didn’t you tell me to stop long ago?”

"I was only afraid you *would* stop," laughed Eric.

"Thank you! I am afraid I am too much of an enthusiast at times though. But I like to meet another enthusiast. You will find that unless you can eat steel, sleep steel, and breathe steel, you have made a mistake in your calling. Steel is a zealous mistress. Well, good night. If I have made you miss your supper, I will say I am sorry in advance."

And Mr. Radcliff waved his hand cheerily.

CHAPTER FIFTEEN

THE ACCIDENT AT THE BLAST FURNACE

ON the day following his walk with Mr. Radcliff, Dan Reynolds drew Eric over to a corner of the yard during the noon hour. There was a curiously awkward expression on the foreman's face, even after the two were out of range of chance listeners.

"I like you, youngster," he began finally, almost with a jerk. "And I like the way you are buckling down to the job. I know it is hard for a boy raised like you to get used to the smoke and heat down here, and I wouldn't have blamed you much if you had cried quits after that slag-pot affair; but you are fighting it out like a man."

"Thank you!" said Eric flushing, but gazing across at Dan sharply. From the other's manner he felt there was more coming, and he was not mistaken.

Dan knocked out his pipe impatiently, as though it was not drawing right. "So I hope,

lad, that you'll take what I am going to say now as coming from a friend. Some of the men are — are saying —”

“What?” demanded Eric.

“Well, you see, they don’t know what I do, and they saw young Master Fordham talking to you the other day, and last night one of the sample boys saw you walking with Mr. Radcliff, and — and they have got it into their heads that you have been put here for a purpose.”

“A purpose?” repeated Eric blankly.

Dan coughed dubiously. “I thought maybe you’d understand without my having to be plainer. You see, it is sometimes the custom in a big mill to take on a man who will keep the boss in touch with what is going on; that is, who will —”

In a flash it was suddenly plain to Eric. He drew back with his eyes blazing.

“You mean a spy, an informer! And that is what they suspect I am?”

“There, youngster, don’t take it that way. I know better, of course, and I wouldn’t have said anything at all except —”

“But you thought so, too, until I explained!” Eric persisted.

Dan held out his hand. "I know. That is why I said I owed you an apology. I thought then you would understand."

Eric turned his face away. He was fighting desperately to keep back a queer moisture in his eyes. So this was what they thought of him — this was the impression because he had tried to fight his way on his own merits! Even Dan Reynolds admitted —

"Won't you shake hands, youngster?"

For an instant, in the first surge of his bitterness, Eric hesitated, and then he caught Dan's hand.

"I suppose it was only natural after all that —"

"We'll forget *that* part of it," said Dan hurriedly. "I wanted you to know how things are so that — well, you would understand if anything is said to you. I thought maybe I could prepare you." Dan stuffed his pipe back into his pocket as the whistles sounded. "I want you to stick it out, youngster, and show the kind of stuff that is in you. And perhaps, after all it will blow over, and I have alarmed you for nothing."

But Dan's attempt at cheer on that score was

rather forced. Even Eric could divine that the foreman would not have broached the subject without serious fears. It is doubtful, however, if Dan anticipated how soon the need of his friendly warning was to be made apparent.

The next day, as Eric was finishing his lunch with Walter Stelmaszyk, Dan having hurried back to the furnace without even waiting for the slice of apple pie in the bottom of his bucket, he was conscious that a group of workmen had paused near the bench. Even before he looked up he knew that they were discussing him.

A young ladleman, whom he had heard called Scofield, was speaking. Not only was he making no effort to keep his voice lowered, but it was apparent that he was indifferent whether Eric heard him or not.

“Yes, Jack got his ‘time’ last night. They told him they didn’t want men on the slag pots who took a nip during the noon hour. You ask me how it got out? I reckon if you want inside information on the subject you had better ask Dan Reynolds’ new ladle-sculler.”

Eric lowered his glance to his dinner bucket, his face flaming. For a moment he was tempted to spring to his feet in hot denial. And then

his more sober second thought told him to wait.

But Scofield was not finished. Emboldened by Eric's apparently shrinking silence, he continued with a sneer, "I thought we had finished with 'spotters' in the open-hearth mill, but I guess not. Why, this young fellow, Raymond, is so bold about it that he has the Fordham boy coming down to 'call' on him, and walks home with the boss himself, as though he was an old friend. And the poor chaps who work for an honest living have to stand for him prying around."

It was too much. Dropping his dinner bucket, heedless where it rolled, Eric strode across to the group. He knew that hot tears were starting, and that a dry lump had come into his throat. He had no very clear thought about what he was going to do. He knew only that he had been publicly called a "spotter," a spy, and that he could no longer keep silence.

"My name is Eric Raymond," he said, his voice quivering, as he paused before Scofield. "I suppose you meant me to hear what you said about me, but you are wrong, completely wrong!"

"Oh, I am!" was the jeering answer. "I suppose then that Homer Fordham and Mr. Radcliff are old friends of your family, and that you are working here just for the fun of the thing."

"No, they are not old friends," said Eric, trying to keep his voice steady, "and I am working here because I have to make a living, and want to learn the steel business."

Scofield laughed unbelievingly. "Then they are taking such an interest in you on account of your handsome manners, I suppose, and you never heard of Jack White, or never mentioned him to them? Give that story to a wooden Indian, Raymond. For a 'spotter' you tell a mighty weak yarn."

Scofield's laugh ended suddenly. Eric's restraint had been swept away. Heedless of consequences, the boy's clenched hand swung forward and caught the other in the face. Choking under the blow, Scofield staggered back, while his companions stared in a sort of tongue-tied amazement at this new development.

The ladleman recovered himself with a growl. As Walter Stelmaszyk sprang to Eric's side, Scofield rushed at the boy furiously. In

his flood of anger, Eric met the onslaught with a recklessness that would have surprised him under other circumstances. For a moment he parried Scofield's lunges, and then a blow caught him under the chin which sent him reeling to the ground.

"A fight! A fight!" As one of the younger and more enthusiastic of the spectators raised the cry, the group formed a rough circle around the couple. When Eric, with his head whirling, scrambled to his feet, the crowd had been doubled. Recovered from the first daze of the boy's blow, Scofield was grinning confidently.

"Come on!" he sneered. "I can hit twice as hard when it is a 'spotter' I am punishing."

Eric pushed back his hair. He knew now that he had acted unwisely, that he had allowed his anger to run away with him, and that before a man of Scofield's strength, whose muscles had been hardened by years in the mills, he stood absolutely no chance of holding his own. But there was no retreat.

He saw Scofield spring toward him, saw the ladleman's right hand flash out with a force

that would probably have knocked him unconscious had the blow landed, and then, as he dodged under it, there was a shout from the edge of the circle, and Dan Reynolds forced himself through the crowd. With his sound eye gleaming, he planted himself between the two combatants. It was not until long afterward that Eric knew that Walter Stelmaszyk had brought the foreman to the rescue.

"What is the meaning of this, Ben Scofield?" demanded Dan. "I vouch for this youngster. Anything you have to say to him say to me! And if you want to fight, I reckon I can make the proposition a little more even!"

Scofield fell back, flushing.

"So you are ready to vouch for a 'spotter,' are you, Dan Reynolds? I would never have thought —"

"That is about enough talk of that kind!" interrupted Dan. "I happen to know that Raymond is no more a 'spotter' than you are, and if you want to argue the matter with me, I am ready. Most of you men have worked with me a good many years, and you ought to know that I would be the first to give

the spy the kind of medicine he ought to have.”

“Then how do you explain about Jack White?” snapped Scofield. “We happen to know that Raymond had a long confab with the boss, and the very next day Jack got his walking papers. What about it?”

“Why don’t you ask Mr. Radcliff?” returned Dan. “I am not used to having my word questioned, Ben Scofield, and when I say the youngster is all right that ought to be enough. I am busy now. If the men want to appoint you the judge of who is to work here, you will have to see me about Raymond later. So long, mates!”

Halfway to the door of the hearth mill Dan turned. “If you don’t mind putting in a few minutes extra, Raymond, I would like your help.”

Eric followed the foreman gratefully. There was no effort made to detain him. Even Scofield seemed to stand in wholesome awe of Dan Reynolds’ influence. Eric could feel the young ladleman scowling after him, however. There was no doubt that so far as he was concerned the truce was only temporary.

"I wish I could tell you how much I appreciate your kindness!" began Eric to Dan, as they stepped back into the mill.

"Don't try to," returned the foreman rather gruffly. "It isn't the first time that Ben Scofield and I have come together."

As Eric was putting on his coat in the wash room that evening, Dan returned to the subject of his encounter with the ladleman for the first time during the afternoon.

"I say, youngster, do you know anyone here at the mill who would try to make things unpleasant for you?"

Eric stared. "Why, outside of you and Walter Stelmaszyk, I don't know anybody well enough to talk to!"

Dan looked puzzled. For a moment he rumpled his hair thoughtfully.

"The reason I asked is that I can't understand that affair of this noon. Of course, I have heard one or two of the men wondering about you and the Fordham boy; and then when they heard how close you and the boss seemed to be there was some talk. But that wouldn't be enough to make Ben Scofield go out of his way as he did. It looks to me as though he

had been put up to find an excuse for a fight with you."

"But why —" began Eric wonderingly.

"That is just what I thought you might know," said Dan dryly. "However, I don't think he will bother you again for awhile. And in the meantime, I'll do a little quiet detective work myself. But don't let it worry you, boy. Remember I'll stand by you, and I have been here long enough to have more influence than you might think."

Dan's suspicions, however, did not appear to bear fruit. In fact, Eric found an increased note of friendliness in the greeting of the men as he met them going to and from the mill and during the lunch hour. Ben Scofield's accusation seemed to have been forgotten. Once Eric met the young ladleman, but the latter looked steadily in the opposite direction, evidently not anxious to renew hostilities.

Had it not been for the disquieting comments which his meetings with Homer Fordham and Superintendent Radcliff had caused, Eric would have felt himself acclimated to his new environments. If proof had been needed of the sincerity of his enthusiasm in his work,

the manner in which he had faced the disagreeable features of the plant would have supplied it. It would have required something more than a casual interest in machinery for a lad not used to mill life to meet the hot, smoke-laden atmosphere, and the clouds of grime which seeped into every pore of the body until it seemed that the most vigorous scrubbing could not remove them. It was not pleasant work, even apart from the heat and dust, bending for hours over the metal-caked ladles until every muscle cried out in protest; but there were three facts which held Eric to it.

One was the new expression which came gradually into his mother's face, the dawn of a new hope, the removal of the drawn anxiety, which told of her hours of worry over the problem of their future. Eric's second fact of comfort was the remembrance of Mr. Radcliff's story, and his remark, which came to him over and over again, "No, ladle-sculling isn't pleasant. But it did a great deal for me. It taught me to submit to the drudgery of mechanical labor — it broke me into the harness, as it were." Eric could understand now what kind of "harness" the superintendent meant — the harness of self-

control, of routine habits of work. As the days wore on, he was conscious of a new poise, a new strength which he would have found it hard to define. It was the strength which comes from self-mastery. The third fact of help to him was the never-lessening fascination of the great machinery about him. To Eric each day brought a new marvel in the wonderland of steel. And the fascination was something more than that of a spectator. With it was the thought that even in his humble position he was bearing an active part in it all, that he was helping to make the finished product possible.

It was this latter fact which made him linger at the mills often after his day's work was done, and which took him on exploring trips to other buildings of the plant. In all of the panorama of machinery it was the blast furnaces which gripped his imagination the hardest. Once he aroused himself with a start from a survey of the man-made volcanoes, and realized that he had been watching them for an hour. His mother's suspense when he reached home made him realize suddenly the construction she had placed on his tardiness, and he did not repeat the offence again until the memorable

day of the windstorm and the double tragedy at furnace No. 9.

Eric's first day at the American plant had been marked also by the laying of the first brick in furnace No. 9. There were ambitious plans for this new addition to the blast furnaces. It was to tower above its neighbors at least twenty feet, and was to have an increased capacity above the others of double that many tons. As Eric watched it mount higher and higher, it seemed to him that the creation of brick and iron was fully conscious of its superiority and already was frowning down on the world in a realization of its importance. It takes much time and labor to build a blast furnace. Almost as much care enters into its construction as goes into the erection of a skyscraper — and with the various items of its equipment the cost is sometimes even higher. In the beginning of Eric's third week at the mills, the new furnace had not progressed more than a score of feet, and grave doubts were expressed as to the ability to complete it before winter made construction work impossible.

It had come to be almost a daily habit of

the boy to pass the skeleton of the new furnace on his way to the gate, often in the company of either Dan Reynolds or Walter Stelmaszyk. On the day of the windstorm and its tragic sequel Eric was alone. The sky had been filling up with angry, dark gray clouds since noon. A cold, driving wind, rising almost to a gale, was sweeping in from the lake, and most of the men in the open-hearth mill had been glad to retreat from the yard and eat their lunches in the wash room. As Eric turned out of the building he found that the wind had perceptibly increased. For a moment he was tempted to take a short cut to the street, and abandon his visit to the blast furnaces. With a low laugh, he plunged into the gale. The wish to see "Old Baldy," as he had dubbed the new furnace, was stronger than his desire to escape the storm.

He had reached the corner of the slag mill, the last building between the open-hearth plant and the blast furnaces, when a sudden dull rumble, like distant thunder, shook the earth. Eric quickened his steps to a run. There was something sinister, threatening in the sound. A burst of confused shouts was ringing out ahead

of him, and as he rounded the slag mill a man running in the opposite direction carromed into him.

"Furnace No. 9 has gone over!" the man gasped. "There are three or four men under it! The wind did it!"

CHAPTER SIXTEEN

A HAZARDOUS RESCUE

THE next minute Eric saw the disaster for himself. The brick walls that were to make the new blast furnace had been swept into a great jagged pile, from which a cloud of powdered mortar was swirling up into the gathering dusk like a billowy white cloud. The walls might have been leveled by the sweep of a giant sledgehammer. "Old Baldy" could not have been wrecked more completely.

Men were running now toward the scene from all parts of the plant. As Eric reached the zone of the débris, Mr. Radcliff came dashing to the spot without either hat or coat.

"Here, Jenkins!" the superintendent called, his eyes lighting on the foreman of the construction gang. "You needn't tell me how it happened now. That can wait until later. Is anybody hurt?"

"Williams and Oliver are under those bricks,"

said the foreman crisply. "And somebody says another man was caught, too, who was watching the work."

"It was 'Silent' Battles, Mr. Radcliff," supplemented a voice from the crowd. "I saw him just as the furnace went over."

Eric's nerves leaped to a sudden tension. "Silent" Battles! The man who had snatched him from death buried somewhere under that jagged heap of wreckage, perhaps gasping with agony, maybe already dead! The confused shouts of alarm and frantic orders that had followed the accident had died away. The fast-increasing crowd watched the scene in silence. Even the rumble of the other furnaces seemed strangely subdued, as though the fact of the tragedy had penetrated to their devouring depths. A dozen acetylene torches had been lighted and thrust into the ground, and their yellow flames threw queer, wavering paths of light into the gloom. From the mass of débris came no sound. Were the men, crushed under its weight, still alive? Even had they escaped instant death their voices could not have been heard through the tons of brick and iron above them.

Mr. Radcliff was not a man to waste time in such a situation. His success had been made largely through prompt action in just such emergencies. Even before the answer to his first question had been given he had leaped to the edge of the wreckage and was scanning its bulk critically.

"We have got to dig down under this!" he jerked out. "And we have got to do it carefully. If there is any life below, we may crush it out instead of saving it by hurrying unwisely. Jenkins, have that crane moved over here to the right! And now, for volunteers, men," he said, raising his voice. "The crane can only operate from one end of this pile. We will have to work toward it by hand. Who is willing to help? The next half-hour may mean the saving of a life."

A dozen sprang toward the superintendent from the crowd. Eric was one of the first to respond. He did not know exactly what Mr. Radcliff's plan was, but he knew that "Silent" Battles was pinned somewhere under the shadowy débris, and that here was a faint chance of helping him.

To a person not familiar with the machinery

of a steel mill, the removal of the ruins of the furnace would have seemed a task of days. The broken bricks and twisted iron made a heap perhaps twenty feet square and a dozen feet high.

As the volunteers from the crowd gathered together, the electric crane, used for loading the flat cars of the blast furnaces, was swung slowly into position, and, burrowing its heavy tentacles into the débris, pivoted back with its first load. A faint cheer was started, but died away as Mr. Radcliff raised his hand.

"I am taking a chance in using the crane. We must remember that its weight forces down the wreckage with each load it carries away. The real work of rescue we must do ourselves. Now, then, all together! And keep your ears strained for the slightest groan or cry that will guide us in the direction to take."

It seemed a hopeless task. And then Eric caught Mr. Radcliff's eye, and the superintendent, recognizing him, nodded cheerily. There was a vigor, a determination in his attitude which acted on those around him like a spur. John Radcliff, steel man, urging on the rescuers at the wrecked furnace, might have

been a general leading his command to a last charge on the battlefield.

Again and again the line of rescuers returned to the heap of débris, and staggered away, with their hands bruised and bleeding. With the system of a born executive, Mr. Radcliff soon increased the dozen of volunteers to eighteen, arranging the line so that there was no confusion or wasted energy. From the other side of the wreckage the crane continued its monotonous burrowing into the débris, swinging backward and forward with a lumbering, awkward motion, but reducing the jagged pile almost unbelievably with each clutch of its tentacles. So far there had been no indication of life under the mass. Except for the hoarse breathing of the line of rescuers, no human sound came from the slowly lowering heap.

And then suddenly a low cry came from the man at the extreme edge of the wreckage, who was stepping back with his load. Dropping his bricks, he bent down for a moment, and then called excitedly to Mr. Radcliff.

“There is a man down here! I can hear him calling! You can hear his voice yourself, sir, if you stoop low.”

Mr. Radcliff straightened quickly.

"By Jove, you are right! Here, a half a dozen of you! Take hold at this end for a few minutes, and we'll see if we can make him understand that help is coming!"

The cheer that now came Mr. Radcliff did not check. The superintendent himself joined it, and then taking his place in the line labored as enthusiastically as his subordinates. At the end of ten minutes he held up his hand for a pause, and stooped again over the débris.

"Can you hear me?" he called, with his hands to his mouth. "Rescue is on the way! Can you keep up until we get to you?"

In the silence that followed his words, he dropped to his knees and bent his head until it was touching the bricks. At his shoulders the crowd leaned forward, scarcely breathing as it watched him. Mr. Radcliff raised his voice.

"It is 'Silent' Battles, men! He is under a beam, with his shoulder caught. But otherwise he isn't hurt."

The superintendent crawled to his feet, and stood studying the wreckage with a frown.

"Hurry over half a dozen jacks, Jenkins,

and some light timbers. I think I see a chance to reach Battles without waiting to dig down to him."

"You mean a sort of a tunnel, sir?"

"If we can do it! There is just a possibility. Now, men, let's keep on as we were until Jenkins gets back. It may be a matter of minutes at the end."

When Jenkins and a companion returned with the jacks and timbers, Mr. Radcliff put his plan into immediate action. Two of the jacks were screwed into position, and a couple of the timbers thrust over them and under the edge of the débris in such an angle as to give a good purchase. Six men on the other end of the planks bore down gently at first, and then more firmly as they saw that the jacks were secure. The mass of wreckage shifted slightly, but enough to show that the upward pressure was telling. And then an ominous crack sounded from one of the planks. The first cries of elation were checked. The timbers could not stand the tremendous strain.

"We'll try iron girders," directed Mr. Radcliff, quick to grasp the situation. Cautiously the timbers were removed, for fear of increas-

ing the weight of the wreckage on the imprisoned men, and the girders substituted. Again the weight of six of the strongest men in the crowd was exerted. Even in the dusk it was easy to see that the muscles of their shoulders and arms were strained like whipcord. But the leverage was having its effect.

Three, four, six inches the wreckage was lifted. Mr. Radcliff called two more men to the girder. With this slight increase in the leverage the raise in the débris was even more perceptible.

“Now, then, hold it!” cried the superintendent. Seizing another jack he crawled forward to the edge of the wreckage, and wormed himself under it until half of his body had disappeared. When he emerged it was to seize another jack and disappear again under the débris. As grimed and panting he crawled back to safety, a voice in the crowd sang out, “What’s the matter with Radcliff? Three cheers for Radcliff!”

The superintendent flung up his hand.

“This is no time for cheering, men. The hard work has just started.”

As though his example had given a strange, new energy to the rescuers, the next effort

raised the débris three inches farther, and the girders were shoved inward to the second pair of jacks. A passageway of more than four feet had now been cleared under the bricks.

Mr. Radcliff flashed a torch into the space, and then straightened anxiously.

"I am afraid I can't make it again. It will need someone small and active to put up the next jacks. Who will volunteer?"

Eric stepped forward.

"I am ready, if you think I can do it."

Mr. Radcliff surveyed him for a moment in silence.

"It wouldn't be fair to hide the fact, my boy, that it is a hazardous attempt. Even the passage that we have opened may be blocked again at any minute, and we would be powerless to prevent it. If the wreckage should sink again, it would probably mean death to anyone caught under it."

"I am willing to take the risk," said Eric quietly.

Mr. Radcliff nodded gravely. "As you will. We will do the best we can for you, my lad."

Eric kneeled down before the opening, hugged the jacks under his arms, and for an instant

glanced up at the smoke billows of the blast furnaces, whipped like an angry sea by the wind, through which the stars shone cold and far away in a slate-gray sky.

Only for an instant did he hesitate. And then, as the thin yellow light of Mr. Radcliff's torch flashed over his shoulder, he drew a deep breath and crawled slowly through the opening before him. As his shoulders squeezed into the passage, the glow of the torch was practically shut off, and he knew that he would have to make any further progress in darkness.

It was laborious work, and made still more difficult by the fact that he was obliged to hold his arms extended in order to keep the jacks before him. Several times he struck his head a sharp blow, and twice was forced to a complete halt. It was much like a mole burrowing its tortuous course underground. And what if the débris above him should shift its position, or the jacks supporting the passageway should become dislodged? A sudden cold tremor shook him as he pictured the tons of wreckage crashing down onto him, the awful suffocation, the fight for breath —

His groping hands struck a solid surface ahead.

He changed his position slightly, but the passageway extended no farther. Cautiously he raised his jacks. Now would come the real test, the agony of indecision. Would the supports hold? His numbing fingers twisted the last screw into place, and scooped a little hollow in the ground to give the jacks a firmer foundation.

“Mr. Battles!” he called hoarsely. “Mr. Battles! Can you tell by my voice how much farther in we’ll have to work to reach you?”

He waited a moment. And then as slowly and steadily as though the speaker had been talking from an armchair came the answer, “I should say about two feet, certainly not over three feet.”

“Good!” called Eric encouragingly. “Keep up your spirits! We are coming!”

But were they coming? Even as the boy spoke the words, he realized how little there was to build them on. Indeed, would he ever reach the open air again himself? If his forward progress had been difficult, his backward course was doubly so. He knew that he was gashing his face and elbows cruelly, that his muscles were stretched into a constant

torment, and that in the combined darkness and suffocation his head was whirling. And then came the horrifying thought that he had ceased to make progress, that he was cramped into a position from which he could not move —

Something closed on his legs with a grip like a vise. He tried to throw it off, but he couldn't and then he knew that it was a pair of hands, that he was being pulled from under the edge of the mound of death.

"I knew you would make it, youngster!" cried a hearty voice in his ear. Mr. Radcliff's arm flung itself over his shoulders, and as he drew in deep breaths of the invigorating night air he saw the group at the jacks sway forward again, once, twice, and knew that the weight of the débris had been raised again.

The superintendent dropped to his knees, and flashed his torch once more under the wreckage. He rose to his feet, and without a word took Eric's arm, and stared down into his face. When he spoke again, his voice was quivering.

"Do you think you can do it again, my boy?" he asked in a tone so low that the lad scarcely heard him.

Eric tried to smile back.

"I'll do my best, sir."

"If you can reach Battles with another jack, I think you can get his hands, and we'll try a sort of living-chain affair to get him out. I would go myself if there was any chance at all that I could squeeze through. As it is —"

Eric felt Mr. Radcliff press into his hand an electric search-lamp, that had been brought from his office, took the extended jack held out to him, stooped a second time into the rough passage, and saw a thin needle of light go dancing ahead of him as he pushed the button of the search-lamp. In through the darkness it cut like a golden pencil stroke, against the jagged bricks, the half-buried jacks, forced into the earth by the terrific strain above them, and finally at the end of the hazardous tunnel it struck the face of a man, stretched flat on his breast, and traced out his features one by one, as an artist paints a picture on a blank canvas. It was the gaunt face of "Silent" Battles. Afterward Eric knew that he was suffering torture such as comes to few men, but there was no hint of it in his face, nothing but a grave, self-contained confidence. He

was looking death in the eyes with the quiet, impersonal curiosity with which a surgeon might have surveyed an interesting case on the operating table.

And there was that in the face which drew Eric's dragging limbs like a strange, powerful magnet, which kept him to his task foot by foot, and at the last inch by inch, until he stretched out his jack, jerked it into place, and felt the hand beyond close over his. For just an instant he felt it tremble with the shock which came from the sudden release of the weight on the crushed shoulder, and then it steadied in a firm clasp, which was not broken again.

A confused murmur was ringing in his ears, like the surge of rushing water. He knew that presently it would sweep over him, and buffet him down and down until —

“They are cheering, my lad! Don’t you hear them?”

The even tones of “Silent” Battles bore down through the darkness and ignited some last forgotten spark of vitality. Of a sudden he knew that the surge, like rushing water in his ears, was the encouraging shouts of the men at

the other end of the passage, and that the hands which had dragged him to safety before had him fast again.

And now a great gulf of the blessed air beat through into his grimed face; he felt himself being lifted upward and outward, saw the racked form of "Silent" Battles pulled to the open with him, and was conscious of a circle of wildly enthusiastic men surrounding him, and thumping him on the shoulders, and crying all manner of foolish things which he could not understand.

He knew that one was Dan Reynolds, and then, as the mist cleared somewhat, that Walter Stelmaszyk was laughing and crying alternately at his shoulders.

It was the latter who aroused him.

"Why, you look as though you had been buried in a cinder pit for a month! If your name wasn't Eric Raymond, it might be 'Cinders'!"

Eric laughed back weakly, hysterically. And then quite suddenly his laugh died away. Surely his brain, weakened by his ordeal, had played him a trick. There on the edge of the crowd, etched vividly for a moment in the torch-

light, was a white, staring face, with a pair of black, shifting eyes, and thin, tightly pressed lips. It was the face of the balked thief who had tried to steal the blast-furnace plans, the face of the man whom Detective Rogers had called "Walker" on that memorable night at "The Oaks."

CHAPTER SEVENTEEN

MRS. RAYMOND HAS ANOTHER SHOCK

NOT until midnight was the wreckage of the demolished furnace cleared sufficiently to reach the other two men caught by the torrent of débris. And then it was found that, even had it been possible for rescue to reach them within an hour after the accident, it would have probably come too late. Both had evidently been killed almost at once. This fact made the escape of "Silent" Battles all the more astonishing. The beam that crushed his shoulder and held him prisoner had saved his life. Had it not been for the protection that it afforded, undoubtedly he would have shared the same fate as the others.

When Eric reached the mills the next morning the wreckage was being loaded onto flat cars, and it was announced that, in view of the lateness of the season, the rebuilding of the new furnace would be suspended until the next

spring. The first person that Eric met was Walter Stelmaszyk.

"Good morning, 'Cinders'!" said the young Hungarian, grinning. For a moment Eric stared at him, not understanding; and then he remembered the incident of the previous evening.

"I—I was only—what you call joking," stammered Walter, fearing he had given offense. "I won't call you that if you would rather not."

"Oh, I don't mind," said Eric laughing, taking the other's arm. To his surprise he was given the name by several others during the day. Mill men, like circus men, have a vocabulary peculiarly their own, and are quick to seize on the slightest excuse for a nickname. Although Eric did not realize it, the sobriquet of "Cinders" meant that the men of the plant had accepted him as one of themselves, that they were satisfied he had passed the test. They do not bother to rechristen an "outsider."

"Silent" Battles was still under a physician's care. The examination of his shoulder had revealed a broken collar bone and a mass of ugly bruises. Under ordinary circumstances it would be ten days or two weeks before he

could expect to resume his work. It was not until Eric asked for his address, with the idea of calling on him that evening, that he found how much aloof the silent worker of the "House of Secrets" had been living. No one among the men was able to tell him where he resided. In fact, no one appeared to have been on intimate terms with him at all. He was as complete a mystery as the task on which he labored behind the barred doors of the experiment station.

"I reckon you'll have to inquire at the office," said Dan during the noon hour. "They will have his address on the employés' records, or maybe Mr. Radcliff can give it to you."

He broke off, frowning. Ben Scofield had shuffled rather awkwardly toward them, and when he caught Dan's eye stood flushing uncertainly.

"I have come to try to square myself, Raymond, if I can. I see now what a mistake I made, and I want to know if you can forget it and shake hands."

A glance at the young ladleman's burning face was enough to show what an effort the words cost him.

"Forget it?" cried Eric heartily. "Of course I can! And I am mighty glad to do it!"

Scofield shifted his feet.

"There is something else I ought to tell you, too. Do you know a man named Walters, over in the slab mill?"

"Walters?" Eric shook his head. "No, I don't believe I do. Why?"

Scofield glanced over his shoulder, and lowered his voice.

"It was Walters who first started the story of your being a 'spotter,' and who tipped me off that it was you who got Jack White his walking papers. And I happen to know that he has been trying to put the men up against you since then."

Dan Reynolds looked up with sudden excitement.

"There, youngster, what did I tell you? Didn't I say that there was underhanded work going on somewhere?"

"But I don't understand. I can't see why — Can you describe Walters for me?" Eric broke off. A sudden idea had come to him as he recalled, almost for the first time during the day, his fleeting view of Walters in the dusk

the night before. Could it be that Walters had come back to the mill and secured employment under the name of Walters?

"Let me see," said Scofield, frowning. "I guess maybe Walters is three or four years older than I am, dark, and rather slender. He doesn't look as though he has been used to much hard work, but he must know machinery to hold his job."

Eric's eyes glistened. The description fitted Walters exactly.

"How long have you known him?" he asked.

"Only two or three weeks. He is a new man here — came to work only two or three days after you did."

"I say," interrupted Dan, "I don't know what is on your mind, youngster, but if you have an idea that you know this fellow, why don't you go over to the slab mill and take a look at him? That is the easiest way to settle the matter."

"It would be — if you could find him," grinned Scofield. "But he's gone. He asked for his 'time' this morning."

Eric stared. If the man was really Walters, could it be that he had left suddenly because

he knew that he had been recognized, and feared exposure?

"There goes the whistles!" said Scofield, moving away. "I'll see you later. If I run across Walters I'll let you know."

"Suppose you tell me what it is all about," suggested Dan as Eric gazed after the ladleman's retreating figure.

The foreman whistled when the lad told him of his recognition of Walters the night before, and the idea that Ben Scofield had suggested.

"I shouldn't wonder if you are right," he commented. "That accounts for a good many things. Walters saw his chance to add to those stories of a 'spotter,' and worked on the men in the hope that you would be frightened off and quit before you ran into him again."

"But why should he come back?" asked Eric, "knowing the chance he was taking."

Dan scowled.

"He must have had a strong reason. Maybe he came back to finish the job that you interrupted."

"You don't mean that he would try again for the plans that he stole?"

"There may be others that would answer

the same purpose," said Dan gravely. "I told you before, didn't I, that there are persons who would pay a handsome sum to know what is going on in the American Steel Company's experiment station. And Walters wouldn't be taking such a chance in coming back as you might think. He has always worked in the office, and probably none of the men in the mills had ever seen him before, or, if they had, they wouldn't know anything of the other affair. And, besides, the last thing that anyone would expect him to do would be to return to the plant under the circumstances. If I were you I would take the whole story to Mr. Radcliff after work to-night. If there is anything on foot he ought to know about it without delay."

"I'll take your advice," said Eric. "I will stop and tell him on my way home."

When he inquired at the executive offices, however, he was informed that Mr. Radcliff had left that morning for St. Louis and would not be back for two days. Later in the evening the suggestion of communicating with Mr. Rogers occurred to him, but when he telephoned to the plant he was told that the de-

tective was also out of town. The fact, however, that Benson, if indeed the vanishing Walters was the same person, had left the mills quieted his uneasiness, and he felt that under the circumstances forty-eight hours' delay, until the superintendent's return, would not affect the situation.

Purchasing an evening newspaper at the corner drug store, where he had telephoned, he walked home, determined to dismiss the matter for the present. Mrs. Raymond was awaiting him, propped back in an easy-chair in the sitting room. She had made such rapid progress toward recovery in the past two weeks that for several days she had been allowed to sit up for brief periods, and had chosen these periods in the evening, while Eric was at home.

"Here is a report of the blast-furnace accident," he said, drawing a chair up near her. "Shall I read it to you?" He had previously seen that there was no mention of his name in the account. Indeed, his mother was still unaware of the active part he had played in the affair. Finishing the article, Eric laid the paper on the table and stepped into his mother's room for her medicine.

A low gasp from her checked him in the doorway. She had fallen back in her chair, with the same expression of tense, white anguish on her face that he had seen on the day when she had been first seized with her sudden illness. As he sprang to her side, he saw that she was holding the newspaper he had dropped, and was staring at its front page.

“Mumsy!” he cried despairingly. “Mumsy!”

A dozen wild thoughts were racing through his mind, but he tried to put them from him until he could return with the physician. Was his mother’s prostration due to another shock? And if so, what had caused it? Could it be that anything in the newspaper was responsible? Eric shook his head helplessly.

Since those first days of Mrs. Raymond’s illness, he had not referred again to the curious letter that had produced such a disastrous effect on her. Indeed, with the new interests that had come into his life, and the consciousness that his mother was slowly regaining her former health and spirits, he had endeavored to forget the incident. His mother had promised him an explanation some day, and until then he had been endeavoring to school himself to wait

patiently. Did this new development mean that the enigma of the letter, with all of its bewildering questions, was to come into the life of the household again?

Mrs. Raymond had recovered so far that when Eric and the doctor reached the cottage she was able to be carried back to her room. A half an hour later the boy had the satisfaction of knowing that the physician's soothing draught had taken effect, and that she was sleeping.

The doctor shook his head dubiously, however.

"It is absolutely necessary for Mrs. Raymond to avoid excitement of any kind," he said gravely. "Unless she can be assured absolute quiet, I can't answer for the consequences."

Excitement? What possible cause of excitement had his mother been given that evening? Eric picked up the evening newspaper as the physician took his departure, and settled himself at the sitting-room table, determined to read, if necessary to answer the question, every word of the page on which Mrs. Raymond's eyes had been fastened. With the exception of the article relating to the blast-furnace acci-

dent, however, he could find nothing even remotely suggesting an interest for her, and he knew there had been nothing in the article in question to cause her apprehension.

He was returning the paper to the table in bewilderment when he held it for a moment to look at two illustrations accompanying the accident report. One was a picture of the new furnace, in course of construction, taken the week before, and the other was a snapshot of the company's experiment station, before which stood "Silent" Battles. Evidently an enterprising photographer had taken the occupant of the "House of Secrets" unawares, for Eric could well believe that "Silent" Battles would have objected strenuously had he been given warning in advance. As it happened, the picture proved a timely feature, as presenting the only survivor of the catastrophe at the furnace. It was an unusually clear photograph, presenting its subject's gaunt, rugged face with an extraordinary distinctness, and Eric determined to cut it out and preserve it.

The next morning, however, the paper was gone from the table, and when he kissed his mother good-by he saw it lying on her bed, still

open at the front page. For a moment he was tempted to pick it up in the hope that she would explain her interest in it, and then he repressed the impulse with a sigh. When he glanced back he saw Mrs. Raymond's eyes following him wistfully. There was something strangely like pleading in their depths.

Eric's lips compressed, and he omitted his usual cheery whistle as he swung out of the gate. What was the secret that persisted in crossing their lives so suddenly and unexpectedly? Would it ever be explained?

CHAPTER EIGHTEEN

HOMER FORDHAM REBELS

AS Eric was entering the mills the next morning, a carriage drew up at the gate, and the driver, springing to the ground, gave his hand to a man in the rear seat, whose left arm was bound up in a heavy sling. It was "Silent" Battles, with the pallor of his gaunt face bearing added testimony to the experience through which he had passed.

Eric sprang forward with a quick cry of greeting.

"Why, I thought you would be in bed for two weeks!"

A smile flickered across "Silent" Battles' face.

"That is what the doctor ordered, but unfortunately I am not able to obey him. However, I shall have to keep from active work for awhile, I am afraid. I am more crippled than I look." He fixed his eyes suddenly on the boy. "Do not think me ungrate-

ful, young man, if I am not profuse with my thanks. I appreciate the service you rendered me perhaps more than you can understand. I hope it will be possible some day to show my appreciation more substantially than by words."

"I was only trying to even up the debt I owe you," said Eric, flushing.

"Then I am afraid there are a great many people who are not so scrupulous about paying their debts." Again the brief smile flickered across the gaunt face. "By the way, it occurs to me that you have not yet given me your name. I fancy I heard it vaguely the other night, but I was scarcely in a condition to remember it."

Eric stared as he realized that the man to whom he owed his life had counted the service as too slight even to trouble to identify him.

"Raymond," he answered; "Eric Raymond. I was going to call on you last night to inquire how —"

He did not finish the sentence. "Silent" Battles, already stepping toward the gate, stopped so abruptly that Eric fancied he had jarred his injured shoulder. The boy saw the fingers of his right hand clinched tightly to-

gether, as if to fight back a spasm of pain. For a moment he gazed at the lad, his eyes staring, his face twitching. Then he passed his hand wearily across his forehead.

"I am afraid I have overrated my strength, and that I have undertaken a bit too much." He turned back to the carriage, which was still waiting. "Driver, I will have to ask you to help me in again, and take me back home. I'll have to let my work go for another day."

It was apparent that he was controlling himself only by a desperate effort. When he was assisted to the seat, his head sank down onto his breast as though he had been overcome by the exertion he had made. It was not until the carriage was in motion that Eric remembered that he had neglected to ask his address.

He aroused himself with an effort. Now that he reviewed the incident clearly, the suspicion forced itself upon him that there was something more than physical pain in the collapse of "Silent" Battles. And he realized, too, that there had been no chance of a jar of the broken collar bone, as he had at first surmised.

He continued on into the mills in a daze. His life of late seemed to be composed of a succession of mysteries. It was as though he was living in an atmosphere of strange, unexplained things. What reason could be advanced for "Silent" Battles' curious emotion? Their conversation surely had been matter-of-fact enough. He tried to review it word by word, and then gave up the effort with a frown. With distinct relief he heard Dan Reynolds calling to him, and turned to the day's work.

That evening Eric met a real surprise. He had drawn his chair up to the sitting-room table, after the supper dishes had been cleared away, with a copy of "Quentin Durward," which Tom Noraker had brought from the library for him, when a low knock sounded at the door. As he opened it, he gave an exclamation of astonishment. Homer Fordham stood outside, smiling at him uncertainly.

"May I come in?" he asked, as though not quite sure of his reception.

"Of course!" said Eric heartily, recovering himself. "How did you know where I lived?"

"Oh, I asked Mr. Rogers." The boy glanced around the sitting room, at the cozy stand,

the reading lamp, and the rocker drawn up under it.

The taste which had guided Mrs. Raymond in the furnishing of the little home could not be mistaken.

"You certainly look mighty comfortable," he said. "I suppose I ought to have waited to ask you whether I could come over or not, since you didn't accept my invitation; but—"

"I am glad to have you," assured Eric, gradually losing his sense of awkwardness. After all, he was not ashamed of his home, even if a frayed rag carpet did cover the floor. "I would like to have you meet my mother, but she is ill just now."

"Perhaps then I had better go?"

"No, indeed! She is asleep, and we won't disturb her out here in the least."

"I am glad to hear that." Homer flushed. "To tell the truth, I came over for — for a certain purpose. I want your advice."

"My advice?" Eric laughed.

"Oh, it isn't funny a bit, to me. And I came to you because I thought you would understand how I feel. I have decided to rebel."

Eric stared in genuine bewilderment.

Homer drew his chair up a little closer, and lowered his voice.

"I told you, didn't I, that I have been going to school in England? Mother always wanted me to go to Rugby, and then to Oxford. She was an English lady, you know. And father has planned to send me back again next month. He thinks he has it all settled, but he hasn't. I have made up my mind that I am not going."

"But what are you intending to do?"

As Homer leaned forward in his chair he looked very flushed and determined.

"No," he said again, "I don't want them to send me back! And that is final!"

"But what are you going to do about it?" repeated Eric dubiously.

"I don't know. That's the trouble. I thought maybe you could give me a suggestion. If I were only three or four years older, I would get a job in the mills, and go to work."

Eric smiled as he tried to picture the expression of Homer's tutor should that dignified individual chance to overhear such a horrifying statement.

"I don't care! I mean it! Dad wants me

to be a steel man some day, and talks about how I am to take his place, and all; and then he wants to pack me off to Rugby, where they have no more idea of the steel business than — than they do of baseball. All they play over there is cricket."

"But if your father wants you to go — " suggested Eric.

"That's just it! Deep down in his heart he doesn't, and I know it! It is Burke who is talking him into it."

"Why don't you ask Mr. Radcliff to help you?"

"Say, that is a bully idea! But do you think he would do it? Oh, if I could only do something big like you have done, something to show Dad that I am growing up, and am learning to think for myself!"

Homer took his cap, and rose reluctantly.

"Wait a minute," said Eric, "and I'll walk a few blocks back with you."

Before the two reached the door, however, there came a second knock, and Eric opened it to admit Dan Reynolds. At sight of Homer Fordham, the foreman drew back, apologetically.

"I didn't know you had a visitor, youngster. I'll come back some other time."

Eric took his arm and pulled him into the room.

"What do you say, Homer, to hearing a little lecture on steel by one of the veterans in the business?"

"Great!" cried Homer enthusiastically.

"This is Homer Fordham, Mr. Reynolds," continued Eric, smiling at Dan's embarrassment before the president's son. "And I think you will find him as good a listener to your stories as I am. Suppose you tell us where the supply of iron ore comes from, and how and when it was discovered? Take this armchair."

"But — oh, I say," protested Dan.

It was Homer Fordham who turned the scale.

"Please do, Mr. Reynolds!"

"All right then," said Dan resignedly. "So it is the ore you want to hear about this time, youngster? You have given me a pretty big contract. The story of iron ore is one of the most important chapters in the history of American mines.

"The 'Columbus' of the great Superior ore region was Philo M. Everett, a Michigan

prospector. In the spring of 1845, two wandering Indians offered to guide him to a 'mountain of solid iron.' With four men and the roving natives Everett traveled to Lake Superior, bought a small sailing skiff, and coasted westward on what was to prove the most productive, although one of the least-known, mining expeditions in American history.

"For days the party wrestled with the waves, drenched to the skin. It was not until after six weeks of travel by land and water that the Indians pointed to a distant black hill, and said, 'Iron mountain! Indian not go near! White men go!' A native legend inhabited the 'iron mountain' with wilderness demons, casting an evil spell on all who approached, which was perhaps one reason why the redskins were so ready to divulge its location.

"The white men found a rugged hill, one hundred and fifty feet high, of solid ore. They were destined to make more money from their discovery than most of the prospectors who went that year to California for gold. In the year 1891 more than twice as many millions were paid for the iron of Superior as for all the gold that had been mined in California. From

three Minnesota ranges alone, since those days of ‘forty-nine,’ when Peter Everett first explored them with his Indian guides, seven hundred million dollars’ worth of ore have been taken.

“One romantic story follows another in the history of the Minnesota ore mines. One of the most remarkable is the story of Charlemagne Tower and the Vermilion range on the northern side of Lake Superior. There is a certain compound of iron ore and sulphur which the mining experts call ‘fool’s gold.’ Wandering prospectors, roaming through the woods of northern Minnesota, circulated tales of wonderful gold discoveries, and even showed bits of the metal they had found to support their stories. One day, George Stuntz, a surveyor, determined to investigate the rumors. He returned from the Vermilion range with the statement, ‘There is no gold there, but something that may be as precious as gold — iron!’ The ore was tested and found of such a high grade that at once a rush was made to stake out the first claims on the new El Dorado. One hundred thousand dollars was spent by the eager prospectors, and then it was found that

the ore supply was so inaccessible, and the difficulties of transporting it to the coast so great, that the idea of mining it was abandoned. For ten years the wealth of the Vermilion mountains was forgotten.

"The possibilities of the situation, however, had made a deep impression on a Duluth banker, George C. Stone. Curiously enough, it was the panic of 1873, which forced his bank to close its doors, that inspired him with the idea of seeking a new fortune from the Vermilion wilds. He endeavored to promote a company for the construction of a railroad from the ranges to the coast, and two years later persuaded an elderly millionaire, by the name of Charlemagne Tower, living in Pottstown, Pennsylvania, to finance the undertaking. Probably he would not have succeeded, and the world would have been deprived of the Vermilion wealth for another ten years, had not Tower's daughter been in love with a young mining engineer, R. H. Lee.

"'Why not build the railroad and put your new son-in-law in charge of it?' urged Stuntz. His argument won. Twenty-two men were sent into the wilds to stake out claims, and

the building of a railroad from Two Harbors back into the interior was started. Every mile of construction work cost a small fortune. Before it was half completed, Tower had paid out more than a million dollars. The second half of the line cost another million, and before operation could begin the mines had to be opened up and expensive machinery installed. Tower spent three millions and a half, and still there was no prospect of returns from his investment. And then came another panic, sweeping a hundred banks into a collapse. Tower saw his millions gone, and himself threatened with ruin.

“‘Five hundred thousand dollars more, and we will make it!’ cried Stone, still optimistic. Tower decided to risk it. He sacrificed his last securities, and threw another half-million into what was called the ‘Minnesota sink hole.’ In a few months the first ore train from the mines crawled down the crooked track to the dock at Two Harbors. Success had come at last. At the end of two years, a syndicate, headed by Rockefeller, offered Tower eight million dollars for his property — just double what it had cost him. He accepted, giving the

dauntless Stone, who had made his wilderness-dream come true, four hundred thousand dollars as his share of the profits. To-day Two Harbors boasts the best-equipped ore docks in the world.

"And now comes the story of Mesaba, the last and the greatest of the American iron ranges. A few years before the Civil War, a woodsman by the name of Merritt emigrated from the state of New York with his wife and four sons to Duluth, fired by the stories of 'fool's gold.' He found no gold, but was wise enough to know the value of the red iron ore which he discovered instead, and to teach this value to his boys. When they grew to manhood, the four brothers, Leonidas, Alfred, Andrew, and Cassius, followed in their father's steps as prospectors and woodsmen, wandering through northern Minnesota like later-day 'Leatherstockings.' In spite of their love for outdoor adventure, their business sense was not diminished, and their knowledge of timber lands gradually made them wealthy men. In the early part of the eighties, they located their first iron mine on the famous Mesaba range. Later three cousins joined them, and the

seven surveyed and mapped practically the entire range. Duluth laughed at their stories of iron deposits, however, and when they sought permission to make that city the lake terminal of the Mesaba range they were promptly refused. The nearest lake port remaining lay between Duluth and Winnipeg, and to reach it from the mines meant the construction of fifty miles of railroad. Nothing daunted, however, the seven went to work, laying a large part of the track themselves when their capital gave out. In 1892 docks were built on the lake, the mines were opened, and the first train-load of ore was sent to the coast. But the Merritts were not fated to enjoy their success. The panic of 1893 swept them into bankruptcy, and the control of the Mesaba range passed into the hands of Rockefeller and James J. Hill.

"A Mesaba iron mine is one the world's wonders. There are no sunken shafts, no long, winding caverns and subways, no stoop-shouldered miners burrowing into the earth by the light of a sickly torch. For the most part, the ore lies just under the surface, sometimes hardly hidden by a foot of loose soil. Its

average depth underground will not exceed fifty feet. One body of ore is two and a half miles long, half a mile wide, and from one hundred to four hundred feet thick. The thickest deposit is nearly five hundred feet through — a great mass of solid iron ore, dwarfing our tallest skyscrapers. There are five of these treasure pits, producing each year eighteen million dollars' worth of ore. In twenty years the Mesaba ranges have added more than a quarter of a billion dollars to the world's wealth.

"The Mesaba miner is a man with a steam shovel. Eight workmen are assigned to one shovel, and under favorable conditions they can load more ore in one hour than five hundred men can bring to the surface in a day from the deeper 'rock' mines. At every swing of the steam shovel's huge arm five tons of ore drop into a waiting steel car. The arm swings twice a minute. In five minutes the car is loaded to capacity, and another takes its place. When twenty cars are full, a one hundred-and-thirty-ton locomotive starts with them on the eighty-mile journey through the Minnesota woods to the Lake Superior shore.

Two hundred and fifty drills are in operation on the Mesaba ranges, constantly seeking new locations — drills costing from fifteen hundred to four thousand dollars apiece. Iron mining is not all profit, even under the most favoring conditions.

"When Minnesota ore was discovered, part of the land belonged to the state, part to the public-school fund, and part to the lumbermen, who had bought the ground as timber investments. The latter realized more from the royalties of the mines than from the sale of the timber, and this after they had abandoned the land as worthless. Amazing tales are told of old deeds and leases of deserted lumber territories which proved to be the titles to large fortunes. The penniless widow of a Duluth lumberman was clearing out a dusty desk of her husband when she discovered a time-yellowed lease in a bottom drawer. The possession of that lease brought her an income of forty thousand dollars a year from ore mines on the property. The average royalty from an iron mine is twenty-five cents a ton. The public-school system of Minnesota has received over sixteen million dollars from the

leasing of its ore lands, deeded to the purposes of public education in the early days of the state. Fifteen mines are paying a royalty to the schools. Every swing of their steam shovels brings one dollar and a quarter to the service of education.

“This income is not due, however, to wise statesmanship. Quite the contrary. When Minnesota joined the union, the school authorities, in pressing need of funds, clamored for a share of the public lands.

“‘We will give you ten sections,’ generously answered the legislature.

“When the deeds were examined, it was found that the ten sections were in the heart of an unexplored wilderness, apparently of as little value as though they had been staked out at the bottom of Lake Superior. It took fifty years for the point of the joke to be appreciated.

“The Superior ore mines are the last and the most wonderful of the world’s great mineral discoveries. Experts say that at the present rate of consumption their product will be exhausted in another half-century. The same prophecy, however, was made with equal con-

viction fifty years ago, and the mines are producing to-day more than ever.

"The discovery of Lake Superior ore changed the industrial map of the United States. It has opened up a new territory as large as France. It has built up eight railroads, a dozen busy towns, and the largest commercial fleet in the world. This last statement gives us another astonishing angle of the iron and steel industry.

"Only twenty-five years ago the first steel ore boat was launched on the Great Lakes. To-day there is a fleet of four hundred of these vessels. The Suez Canal, the highway between Europe and the Orient, has only one-third the tonnage of the 'Soo' Canal — and two thirds of this traffic is supplied by the iron ore of the Minnesota wilderness. A modern ore freighter carries a cargo of from seven to twelve thousand tons. It is loaded in ninety minutes, and unloaded and ready for its return trip, if necessary, in four hours. In the operation of the ore boats, you can see a fifty-ton car of ore picked up as easily as though it were a box of candy, and tilted until its contents go whirling and roaring into the

vessel's hold. You can see the largest bridge crane ever erected, which can pick up or put down anything from a coal scuttle to a locomotive at any spot within an area of seven acres and a half. It weighs more than an army of five thousand men, and yet it obeys the slightest touch of its operator's hand as easily as a boy's bicycle."

Dan Reynolds finished his story with a little apologetic laugh.

"You ought to know better, youngster, than to start me on Steel. I am just like a war veteran. I don't know where to stop when I get to 'reminiscing.' I beg your pardon, Master Homer!"

"Beg my pardon?" repeated Homer. "Why, I have had one of the bulliest evenings I have ever had. I believe you know as much about Steel as the governor — and that is a compliment."

Dan's face flushed.

"I reckon, Master Homer, that you are a chip of the old block, after all."

CHAPTER NINETEEN

THE FOILED PLOT

A GREAT industrial plant, like a great military camp, has its peculiar sources of underground information. Perhaps this is due not so much to individual curiosity as to a community interest. For days one of the principal topics of conversation at the American steel plant had been the installation of a new, improved series of rollers in the rail mill. The erection of the new machinery had taken several weeks, and, when the date approached for its first test, the result was awaited with keen speculation, not only in the rail mill, but in the other departments of the establishment.

On the day following the visit of Homer Fordham, Dan Reynolds informed Eric that the test of the rollers was to take place that evening, and that he had secured permission from the foreman of the rail mill for them to be present.

“You will have just about time to go home

for your supper," he said. "I will wait for you over at the mill. If the test is a success, I think you will see something well worth the trip."

"I'll be on hand," Eric promised enthusiastically.

He would have been a very much astonished youth had he known that neither he nor Dan Reynolds was destined to be present at the test, and that at the moment it was in progress there was to be nothing farther from their thoughts than the new rollers of the rail mill.

Relieved to find his mother much improved, Eric hurriedly changed his clothes, ate a hasty supper, and was back at the plant just as the clock was striking eight. It was a clear, frosty night, and the bracing wind, blowing in from Lake Michigan, and his brisk walk brought an exhilarating glow to his blood, which made him survey the grimy buildings of the plant almost gayly as he passed through the gate.

The plant presented nearly as great a scene of activity as during the day. The smoke rolled in a great dark mass against the sky, with the wavering tongues of fire from the Bessemer

converters showing vividly against the shadows. A crimson canopy enveloped the row of blast furnaces almost as deep and widespread as the glow from a burning building. Only the clang and din from the lines of track were subdued, although during the rush seasons even night did not diminish the activity of the flat cars and engines.

Eric was rounding the billet mill, with his eyes already scanning the yards for a glimpse of Dan Reynolds, when the dark figure of a man a short distance ahead of him caught his attention. He would have probably hurried by without a thought of the incident had the figure not paused at the end of a row of slag cars. As it chanced, an acetylene torch had been thrust into the ground at this point for switching purposes. Even as Eric was turning away, the shifting light of the torch fell full upon the man. Although the other leaped back instinctively into the shadow of the cars, and made a movement to pull his dark cap down over his eyes, the illumination had been sufficient to show his identity. It was Walters.

Eric huddled back against the side of the

billet mill. He saw that he had not been observed. Indeed, it was doubtful that, even had Walters noticed him, he would not have been recognized in the shadows. For a moment the lad considered the situation. What was the purpose that had brought Walters back to the plant? It was obvious that he had not secured employment on one of the night shifts, and it was equally apparent that, whatever his errand, he was not desirous of being recognized. In fact, his whole manner was that of a man taking pains to escape observation. Eric was not given long, however, for speculations. As he strained his eyes toward the flat cars, he saw Walters slip from the opposite side, glance quickly about him, and then run diagonally across the yard.

Without a second thought, Eric sprang to the line of flat cars, and, bending as low as possible, darted along their length. When he reached the last one, he saw that Walters had disappeared around a building ahead, that was used as a shipping warehouse. The yard was deserted. The man, of course, might be waiting in concealment to ascertain if he was being followed; but the chances were that he was con-

tinuing to his destination, wherever that might be, without a pause. Eric decided to risk it, and, leaping boldly out from the shadow of the cars, shaped his course for the warehouse.

As he first rounded the building, the boy fancied that he had lost the chase. And then he again sighted Walters. Had he been a moment later, he would have missed him completely. The man had paused before a small tool shed, and was apparently rapping softly on its door. Even as Eric caught the outlines of his figure in the darkness, the door opened and closed almost instantly behind him.

Eric crouched at the corner of the warehouse, waiting. But no further sign of life came from the tool house. There was not even a flicker of light from its window. Had he not been certain of what he had seen, he would have been tempted to the conclusion that in the shadows he had mistaken Walters' destination. There could be no doubt, however, that the man not only had entered the building, but that he had been expected by at least one companion, who had preceded him, and who had opened the door at his knock. What could be the errand requiring such a measure of stealth and secrecy?

And if the tool house had been selected only as a rendezvous, why would not a point outside the plant have answered the purpose much better, and with less fear of discovery?

It did not need the increasing numbness in his limbs to warn Eric that time was passing. And it was clear that from his present position he was making no progress in the solution of the mystery. Should he summon Dan Reynolds? Or would the delay in finding the foreman and bringing him to the scene give the occupants of the tool house time to complete their errand and disappear? Eric drew the collar of his coat over his neck, gave a final glance around the yard, and decided to undertake a closer investigation of the affair alone. Thirty yards brought him to the tool house, as dark and silent on a nearer view as it had appeared before. He had made a complete circuit of the little building before he discovered the slightest evidence that it was occupied. On the side farthest from the warehouse was a small crack between the rough boards, and through this for an instant flashed a shaft of light.

He could no longer doubt the importance of

his chance discovery, or the sinister purpose of the occupants of the tool house. It was true that he could not fathom their errand, or the manner in which they proposed to accomplish it, but the investigation of the details could wait. Whatever was being planned, he must find help at once.

The billet mill was only a short distance from the gate of the plant. Just across the street was a drug store, with a public telephone booth. If Mr. Radcliff had returned from St. Louis, he could probably reach him at his home, or at least learn his whereabouts. And the young superintendent would grasp the importance of the situation without delay.

Eric drummed on the edge of the instrument in a growing fever of impatience as he waited for his connection, and then came the monotonous voice of Central, "Your number doesn't answer! There doesn't seem to be anyone at home!"

Eric dropped the receiver with something like a groan. But his eyes lighted the next moment. Why not call Mr. Rogers? He ran through the directory for the home address of the company's detective, only to be disappointed

again. He did not know that the detective was a bachelor and lived at a hotel. His hand was on the door of the telephone booth when he turned back with a last inspiration. Perhaps he could locate Mr. Rogers at the Fordham home.

The voice of a woman servant answered his connection, and took his message with a stolidness which made him fume.

“It is Mr. Rogers, the detective, that I want!” he almost snapped finally. “Get him at once! Tell him that the matter is very urgent!”

He opened the door of the booth far enough to see the clock. The hands pointed to twenty minutes past eight. Although he had no means of judging his time exactly, he felt that at least ten minutes had elapsed since he left the tool house. And Walters’ patience might be exhausted and the conspirators already carrying out their plot! A click sounded at the other end of the telephone wire, and he bent down as he caught a voice. It was Homer Fordham.

“Hellow, Eric! What’s up? I can’t find Mr. Rogers!”

“We *must* find him! Tell him that it has to

do with the same person that we saw at ‘The Oaks,’ and that it is a matter of minutes!”

Over the wire he could hear Homer gasp excitedly.

“I’ll do my best! Where are you?”

“Have Mr. Rogers come down to the plant! I will be watching for him at the gate!”

Without waiting for Homer to comment farther, Eric dropped the receiver. He did not dare to wait longer. And perhaps he could locate Dan Reynolds while he was waiting. If Homer found the detective without delay, Mr. Rogers could easily reach the plant in an automobile in a quarter of an hour. But would Walters and his companion wait a quarter of an hour?

Eric’s luck turned as he ran back to the mills. Almost the first person he saw as he reentered the gate was the foreman, puffing contentedly on his pipe.

“You are late, youngster! When I didn’t find you at the slag mill, I thought I would walk over —”

Dan’s sentence finished incoherently as Eric seized his arm and gasped out his story. The tool house was still apparently deserted when

the lad and the foreman cautiously approached it, Eric completing his narrative on the way. Dan was drawing back doubtfully when the youth pointed to a shaft of light emanating from the crack in the rear.

"I guess you are right, youngster, after all! I was beginning to think that —"

"Oh, you will find that I haven't been dreaming!" Evidently the occupants had not yet seen fit to leave their retreat.

"I expect you had better leave me here on watch while you wait for Mr. Rogers at the gate. If he comes at once, he ought to be here in the next ten minutes."

Eric nodded.

"Have you any idea what's on foot?"

"I think I could give a pretty good guess, but I'll wait until I see whether my theory is right. Unless I am very much mistaken, your friend Walters is going to meet with a disagreeable surprise."

To Eric, pacing restlessly back and forth in front of the gate, the following quarter of an hour was one of the longest of his life. Twice he turned with the idea of rejoining Dan Reynolds and giving up the detective.

It was only the reflection that the foreman could take care of an emergency, and that Mr. Rogers would be at a complete loss where to find him, and consequently in ignorance of the situation when he should arrive, that kept him to his post. When finally the blast of an automobile horn echoed down the street and the yellow lights of a motor car swept into view, he sprang to its side before it had slowed to a halt. But Mr. Rogers was not there.

From the rear seat sprang a slight, boyish figure, and Homer Fordham caught his hand excitedly.

“I couldn’t find Mr. Rogers, Eric. I wasted ten minutes trying to locate him. But I—I thought I would come anyway. I knew there was something up, and, and—*please* don’t send me back! Say I can stay, won’t you?”

Eric laughed dubiously.

“I am afraid there is no help for it now. If only we are not too late—”

With Homer panting at his side, he ran back through the gate toward the billet mill, his doubts and fears rushing on him with ten-fold force in his disappointment. If Walters and his companion had started on their errand,

Dan Reynolds, outnumbered two to one, could not hope to check them. And he would have no chance to summon assistance. Walters' purpose would be carried out with no one to prevent it.

But the locality of the tool house showed no change since he had left it, and as they reached the building Dan rose up from the shadows at its side, with his hand to his lips, and a nod that the situation was unaltered.

Before Eric could explain Mr. Rogers' absence, however, the door opened and a head was thrust cautiously out. The head belonged to Walters. Listening for a moment, he called softly over his shoulder, and the next moment was joined by the other occupant of the building. The two did not even pause to close the door as they struck off toward the billet mill. It was evident that their measures of watchfulness were induced more from caution than from any suspicion that they were being watched.

"Let them get on ahead," whispered Dan. "I think I know where they are bound, and we can reach it by a short cut."

The two figures ahead were already lost in

the darkness. Apparently indifferent to the fact, the foreman branched off at right angles to the course the pair were taking. It was not until they reached the open-hearth mill that Eric recognized their surroundings, and then, as they continued on into the yard at its end, he realized suddenly that they were heading toward the experiment station.

The next moment Dan Reynolds pulled him down into the shadows. Just ahead of them, so near that it seemed as though discovery must be inevitable, appeared Walters and his companion.

"I thought I was right!" chuckled Dan softly.

"But the experiment station is empty," said Eric. "There is no one there."

"You are mistaken. 'Silent' Battles came down to work late this afternoon, and I doubt if he has gone back."

The pair ahead had paused before the "House of Secrets" and were whispering earnestly together. They evidently reached a decision, and Walters stepped forward to the door and raised his hand as though to knock.

Dan Reynolds straightened. "I reckon if

we are going to be in at the finish, we had better move a little closer."

They heard Walters' knuckles beat a low tattoo on the door, and, after a silence, repeat it. What followed, Eric always recalled as the tag end of a confused nightmare.

He saw the door open slightly, and the gaunt face of "Silent" Battles peer out questioningly. Walters spoke a low sentence, his hand reached into his pocket, and Battles opened the door farther.

Then, from behind Walters' shoulder, something gleamed cold and bright in the rays of the swinging light in the experiment house. It was a revolver, in the hands of his companion, and it was leveled toward the man in the doorway.

"We want those chromium plans!" said a curt voice.

From this point on, events for Eric blurred into a jumble. He heard Dan Reynolds give a quick shout of encouragement, saw him leap forward, and jumped on at his side. Benson turned with a cry of dismay, but his confederate, observing the smallness of the reinforcements, sprang through the doorway into the

building as Dan and Eric, with Homer Fordham close behind, pitched forward after him.

Eric sprang to his feet to see Walters turn like an animal at bay and grapple with Dan Reynolds. Back against a long table "Silent" Battles was squirming, with his injured shoulder twisted cruelly, and the hand of Walters' confederate gripping his collar. Even as the boy grasped the situation, the man drew back the hand holding his revolver, reversed it with a quick movement, and raised its butt.

With a cry of warning, Eric dashed wildly between the two, with his arm flung up. The assailant of "Silent" Battles changed the direction of his blow with a snarl. The boy had a wild glimpse of descending steel above his eyes, a sudden torrent of hot, dancing sparks whirled around him, and through them he pitched forward into darkness.

CHAPTER TWENTY

SEVERAL MATTERS ARE EXPLAINED

ERIC opened his eyes with a strange sense of ease. Something gratefully cool and soft was wrapped about his throbbing temples. He raised his hand curiously to investigate, and saw that it was an ice-cold bandage, and that he was lying in bed in a strange room, with cool white curtains at the windows.

He closed his eyes wonderingly; but the next moment they flew open in a stare which penetrated even his dulled senses. He could not be dreaming — it was too real! And he could not mistake the touch of her hand! His mother was bending over him, and smiling with the old-time smile he had not seen on her face for weeks.

“Mumsy! Mumsy!” he gasped.

“Yes, Eric!” she said softly. And the old-time smile flooded her face again.

“But — but where am I? What has happened?”

"You are in the Mercy Hospital. You have been here for three days, and you have been very, *very* ill."

Something like two hours later President Fordham of the American Steel Company rose from his desk in his library, and with a cordiality which some of his associates would have viewed with wonder extended his hand to a visitor. It was "Silent" Battles, with his gaunt face still pale from the effect of the blast-furnace accident, and his left arm bound awkwardly in its heavy sling.

"I am giving myself the pleasure of telling you the news first," said Mr. Fordham with a smile toward Superintendent Radcliff, the third occupant of the room. "I have a telegram from our attorney at Washington announcing that he has filed the plans of your invention at the patent office, and that it bids fair to be a record-breaker."

Mr. Radcliff stepped forward impulsively.

"Let me congratulate you! I knew it would win! For the first time, by your new tungsten and chromium process, the world will have a steel that is practically impervious to heat —

a steel that will bore through even steel itself. The Trust was playing for an even larger stake than it dreamed when it tried to steal your plans."

"By the way, what of Walters?" asked President Fordham.

"He and his companion made a full confession, after they had time to realize that they were caught red-handed. They had been laying their plans for weeks ever since Walters' first failure. In the tool shed they had installed one of the new-style telephone dictographs, connecting with the private wire from the experiment station to my office, and knew just the right moment to strike — and even the pass-word that Battles and I had agreed upon to open the door in event of an emergency. If it hadn't been for young Raymond —"

President Fordham nodded. "I think that the company should do something for that young man, Mr. Battles, and I have been trying to devise a practical way to do it."

He stopped at the sudden change of expression in the other's face. "Don't you agree with me?"

"To tell the truth, Mr. Fordham, I hardly

think it will be necessary. I fancy that the company has been forestalled."

"Forestalled? Just what do you mean?"

As the president and superintendent stared at the inventor, they were conscious that a curious change, almost imperceptible at first glance, had come over him. His gaunt, pale face was flushing, a new light had crept into his eyes, and his lips were twitching in an effort to prevent a chuckle.

"No, Mr. Fordham," he repeated, "I hardly think it will be necessary. Eric is already taken care of."

The president and Mr. Radcliff exchanged a sudden glance of comprehension, and the former suddenly fumbled in his desk. When his hand emerged, it held his check-book. Evidently the same thought was in the minds of both of them. "Silent" Battles intended to show his gratitude to the lad who had saved both his life and his invention by arranging for his future.

"Mr. Radcliff and I have gone over the details of your invention, Mr. Battles," said President Fordham, "and I am prepared to offer you a bonus and a ten per cent royalty

for all rights on behalf of the American Steel Company.” He held his pen suspended. “If that is satisfactory, will you kindly give me your initials so that I can make out the check?”

Again “Silent” Battles’ lips twitched, but this time he was unable to prevent a chuckle, which prolonged itself, and bubbled down over his face until it was literally transformed.

“While I am giving you my initials, I think it would be just as well if I gave you my real name.” He leaned across the desk, waited a moment, and then spoke a low sentence which made the two men before him straighten bolt upright and stare at him in a bewilderment that would have been ludicrous under other circumstances. Mr. Radcliff was the first to recover himself. Springing across the room, he caught the other’s hand again.

“You really mean that Eric Raymond is —”

“Silent” Battles’ chuckle broke out once more, and this time he made no effort to check it.

“I mean just that!” He hesitated, and then drew up a chair. “Since you are the first persons, with the exception of one other, to hear the truth, perhaps it would be as well if I gave you the details of the story.”

The telephone on Mr. Fordham's desk jingled a persistent summons, but the president sat gazing at the spare figure of the inventor, apparently too absorbed to answer.

"Ten years ago," began "Silent" Battles, "a locomotive factory in Schenectady, New York, sent two of its agents to South America to open a branch office in Peru. A few months after their arrival, one of the couple was reported killed in the collapse of a new railroad trestle, for which the company was supplying the equipment, in the Peruvian mountains — and almost simultaneously it was discovered that the books of the concern at Lima showed a shortage for a large amount.

"The survivor of the two agents wrote the facts to the home office, wrote that the facts pointed to but one conclusion — that his companion was a thief, and that his sudden death had hastened the discovery of his crime. His statement, supported by the affidavit of an expert accountant, was accepted without question, and the dead man's widow was called to the office and told that her husband had been killed, and that he was a proven defaulter. Crushed under the weight of this double tra-

gedy, she heroically took up the struggle with the world for the sake of her two children, for since her husband's departure a baby girl had come into their home.

"But the man reported killed in the trestle accident was still living. He had been hurled to the bottom of a rocky gulch, and was picked up by the native workman as lifeless. It so happened that an Indian doctor, almost a hermit in his habits, had wandered into camp on the night before the disaster, and through his efforts the stricken man was gradually nursed back to health. When he recovered he was like a man with a sound body and a dead brain, dead at least so far as it referred to the details of his previous life.

"And when his nurse died, in a sudden attack of jungle fever, seemingly the last chain connecting him with his old life was snapped. For years he lived as one of the natives, wandering through the tropics from Peru to Panama. Something of his old mechanical ingenuity was left to him almost as an echo of what had been, and one day he fell in with a mechanical engineer, and with him conceived the idea of an invention in the steel industry which brought

him to the United States as the best market for his plan, and thence to the American Steel Company."

Superintendent Radcliff was walking back and forth across the floor in his excitement.

"And you — you are that man?" he demanded excitedly.

"Silent" Battles nodded. "I am that man! I am Ralph Raymond, come back from the grave with my lost memory found!"

"But how did you learn the truth?"

"I told you that you are the first to hear my story, with the exception of one other person. That person is my wife. A few weeks ago she received a letter from my partner in the South American venture. It was a death-bed confession, exonerating me of the charge of embezzlement, and acknowledging his own guilt. Even then, of course, she had no idea that I was alive. It was a newspaper picture of myself in the account of the blast-furnace accident which gave her the first impression of the real facts.

"The supposition, however, seemed so weird, so fantastic, that it was not until she met me at the hospital after the blow Eric received in the

fight at the experiment station that either of us realized the truth, and —”

The insistent tinkle of the telephone rang out again. President Fordham took the receiver impatiently, but the next minute turned, with even his dignity showing signs of succumbing to the general excitement.

“This is from the Mercy Hospital. Eric Raymond is convalescent!”

“Silent” Battles was at the door almost before the sentence was finished.

“I will see you later, gentlemen. I am going to my — my boy!”

An hour afterward a nurse knocked at the door of Eric Raymond’s room in the hospital. Hearing no response, she ventured to open it softly. For a minute she hesitated as she saw the group at her patient’s bed — Mrs. Raymond, who might have been either laughing, or crying, or both; a tall, gaunt man at her side, with his left arm in a sling, and the lad under the sheets, who had insisted in raising himself to his elbow.

“I beg pardon,” she coughed apologetically, “but there is a young gentleman downstairs who says —”

"I just couldn't help it, Eric!" called a boyish voice excitedly from the hall. "When I heard that you had come around, I couldn't wait!"

Into the room staggered Homer Fordham, his arms filled with a huge bouquet of flowers, a basket of fruit, and three of his most treasured books.

Eric flushed awkwardly as he laid a hand on the arm of the gaunt man at his bedside.

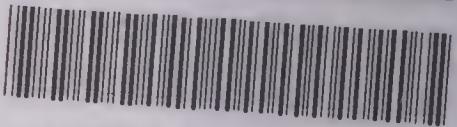
"You are just in time. Let me introduce you to my — father!"

"Oh, I knew all about that before you did," laughed Homer. "Dad and Mr. Radcliff told me the news at the house. But I say, Eric, I have bully news on my part. What do you think? The governor has decided to let me stay here and study, and when I am old enough he is to send me to the Carnegie Technical School at Pittsburg!"

"Why, that is where father says he is going to send me!" cried Eric.

"He is?" echoed Homer, pumping the other's hand up and down in the exuberance of his enthusiasm. "We will be steel men together then, won't we — Cinders?"

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